Railway Age

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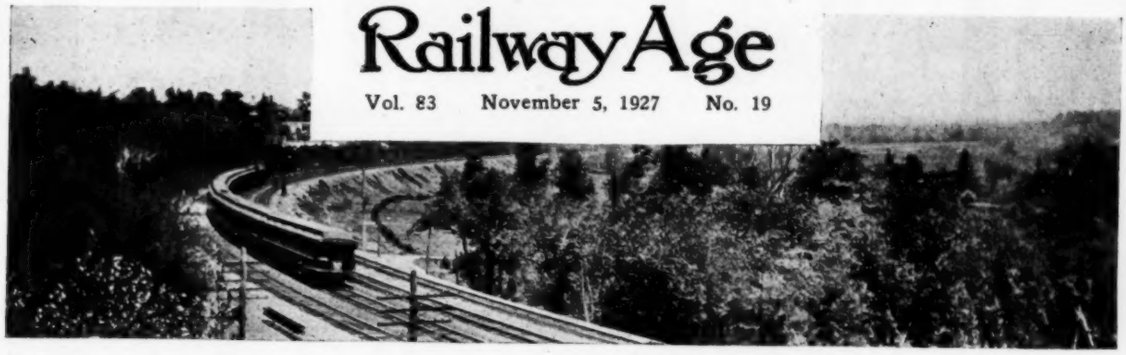

On the B. & A. near Weston, Mass.

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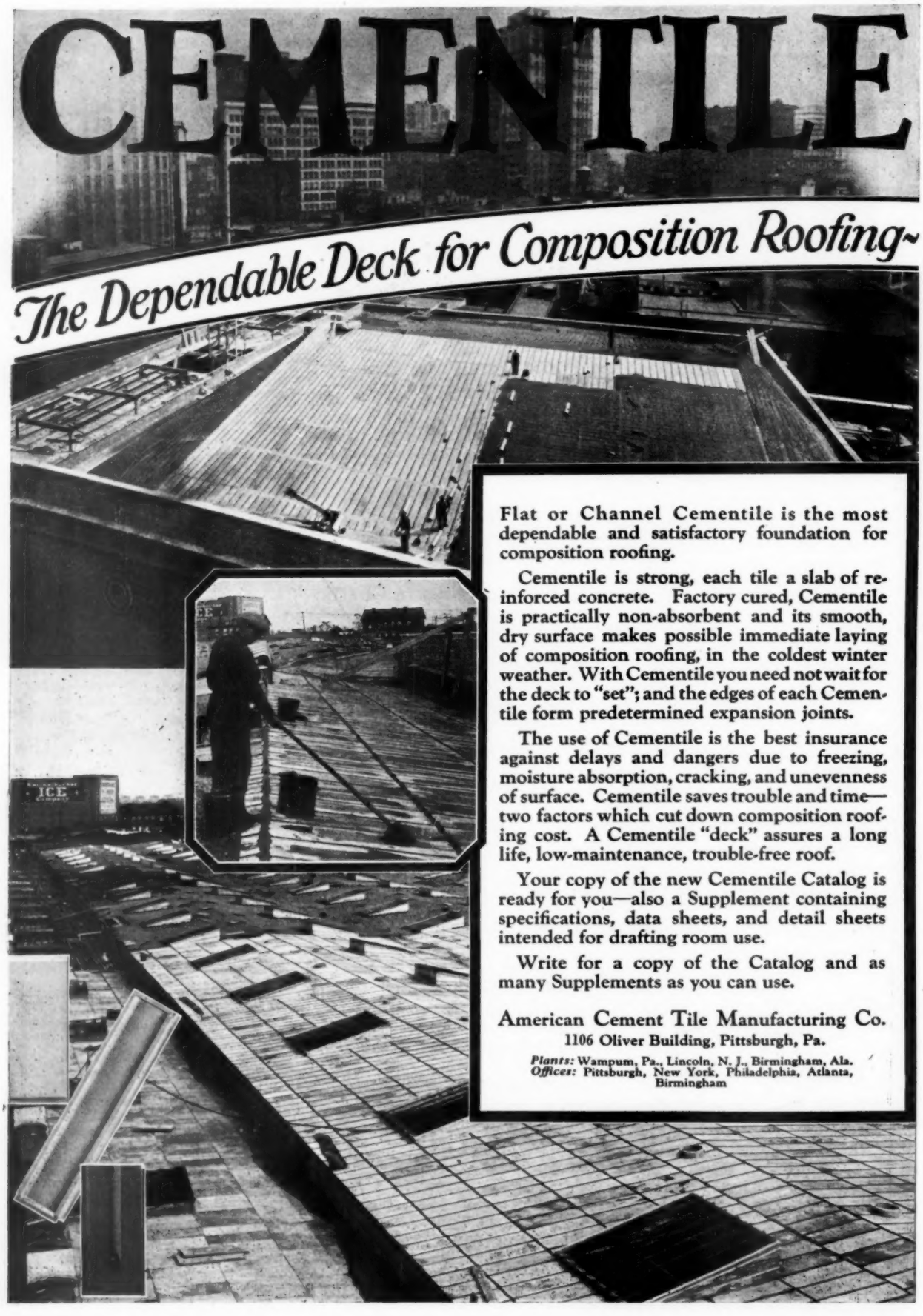

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Railway Age

Vol. 83, No. 19 November 5, 1927 Table of Contents Appears on Page 5 of Advertising Section

Equipment Installations

IT is, perhaps, not altogether news to railroad and railroad supply men that orders for new equipment are not up to what they were a year ago at this time. This is particularly true of locomotives and freight cars. Passenger car orders are somewhat better than for the ten months of 1926. In this period 490 locomotives were ordered this year, as reported in the *Railway Age*, against 828 in the same period of 1926. There were 44,831 freight cars ordered as compared with 47,726 in the first ten months of 1926. Passenger cars ordered were 1,242 against 1,162. Perhaps, it was this dropping off in orders taken together with the fact that installations of locomotives and cars were fewer than retirements in the first nine months that has given the Railway Business Association food for thought as evidenced by President Alba B. Johnson's letter to the members, published in this issue of the *Railway Age*. Not only does he find installations less, but he is especially concerned with finding that there has been a decline of 1.02 per cent in total locomotive tractive force on Class I railroads and a decline of 0.25 per cent in car capacity. And then, from trade prospects, President Johnson sees the possibility of substantially increased traffic in 1928. In such a situation with increased traffic and decreased tractive force and car capacity, he finds a serious problem.

The Example of the Rail Motor Car

DESPITE the tendency for a decrease in short haul passenger travel on the steam railroads during the past few years, which has been accompanied by the installation of relatively light and cheaply operated rail motor passenger carrying equipment, increases in long distance travel have constantly been demanding longer and heavier trains. This has increased the horsepower requirements of passenger locomotives for through service to a point where the economic, if not the engineering, desirability of continuing the trend may seriously be questioned. The advent of the anti-friction bearing in commercial forms promises to effect considerable relief so far as the demands on motive power are concerned. It is probable, however, that this relief will quickly be offset by increases in train length and weight. Further relief must then come from but one source—reductions in the weight of passenger train cars. Such reductions, of course, present no simple problem, and major dependence will probably have to be placed on the development of lighter materials. This is already under way but not yet far enough advanced to offer much relief in structural features of the design. There is one hopeful factor in the situation, however, that has been demonstrated by the self-propelled cars which have been so extensively installed during the past three or four years; that is, that decreased weight requires less provision for the absorption of buffing and pulling shocks. While it is true that this type of equipment has not been built for operation in trains of much more than three or four cars, it is suggestive of a general possibility. Increasing weight to increase strength in itself increases the demand for strength, as the shocks which must be absorbed are proportional to the weight of the moving mass of the train.

A Remarkable Yard Record

A STRIKING example of what may be done by co-operation is supplied by the record established at the Venango hump yard of the Pennsylvania. As described elsewhere in this issue, this yard handled more than a quarter of a million cars in 534 days, without a personal injury of any kind and without damage to a single car. The secret of this remarkable record is found in the fact that the members of the relatively small crew employed at Venango co-operate with each other to the fullest extent, and each of them had been sufficiently long in the service to perform his work efficiently and safely. It is unlikely that the perfect record established at Venango can be equalled at larger yards, where the hazard is correspondingly greater, but the Venango record should supply inspiration for fuller co-operation and more attention to details in the interest of greater safety.

Are Railroads Treating the Cause?

THE upkeep of freight car draft gears is, on the face of it, a detail of car maintenance which should not require the attention of general officers, but, as with many other problems, surface indications cannot be relied on. It is almost impossible to get definite figures regarding the amount that deficient draft gears are costing American railroads. That the amount, in the aggregate, is sufficiently large to justify the attention of the highest executive officers can hardly be denied. The total loss is absorbed in the great sum which the railroads spend annually for loss and damage claims and for freight car maintenance and this explains why, in the past, draft gears have received relatively little attention—much less than their importance warrants. Not only are many damage claims unquestionably due to defective gears but a substantial proportion of freight car maintenance may also be charged to this cause. An experienced car man who has made a study of the subject can walk through almost any repair yard in the country and readily point out many broken couplers, draft sills, truck bolsters and other parts resulting from the fact

that the car body has been compelled to do work which the draft gear failed to do. What action is taken to correct this condition? Draft gears are inaccessibly located; it is difficult to tell the condition of a gear by inspection; car repair forces in general do not connect the broken sill with the defective gear; and in far too many cases the car is repaired and returned to service, equipped with the identical draft gear which caused the trouble. This is "treating the effect, but not the cause," a principle which cannot be justified in law, medicine, freight car maintenance or any other line of human endeavor.

The Development of L.C.L. Facilities

THE freight transfer station which the Chicago & North Western has just placed in operation in the outskirts of Chicago is an outstanding development in less-carload freight handling facilities. While an outstanding project from the engineering standpoint, its most direct interest to railway men as a group lies in the use which is to be made of it. This house will serve as a concentration center for the 18 receiving stations which the North Western now operates in Chicago and its more important suburbs. By reason of this concentration it is estimated that 112 less cars will be required for the movement of this traffic to destination daily. The economy that will be effected by reason of this single advantage is large. It not only releases cars for other service, but it also eliminates the handling of the equivalent of two trains through the terminals and over the lines of the road every day. In addition, as pointed out in a description of the station which appears on a following page, the delivery of much freight at destination is set forward by reason of the fact that the consolidation of the tonnage from all of these stations permits the loading of through cars to many destinations which was not otherwise practical. The development is an outstanding example of the improvements that are being effected in the handling of l.c.l. freight throughout the country today and that are giving the shippers of package freight a service that closely approximates express movement for speed.

Supreme Court Fixes Grade Crossing Responsibility

"WHEN a man goes upon a railroad track he knows that he goes to a place where he will be killed if a train comes upon him before he is clear of the tracks. He knows that he must stop for the train, not the train for him." In these statements and others of a similar trend, the United States Supreme Court has laid down the rule of conduct for motorists and others who cross railway tracks, in a decision rendered on October 31. It supports the contention long maintained by the railroads that when crossing tracks one must exercise care in so doing and that he crosses "at his own risk." The decision will do much to clarify the atmosphere of litigation resulting from grade crossing accidents and will also afford a large measure of protection to the railways in future. It will aid also in settling the relative responsibilities of the roads and the public in the consideration of proposals for the separation of grades.

The advent of the swiftly moving automobile has revolutionized highway travel and created new problems for which the public has not yet found an adequate solution. not the least of which is the heavy loss of life on streets and highways. In a single county of Illinois (Cook), a total of 780 persons lost their lives in highway accidents in the first ten months of this year. A relatively small proportion of these occurred at grade crossings and many of the accidents at these points have been due to motorists running into trains or other carelessness of the type condemned in the decision of the Supreme Court. Yet almost every accident at a grade crossing gives rise to demands for the separation of grades, with heavy expense to the railroad.

It is not contended that the crossing of an important highway over a railway is not hazardous—for it is. Likewise, every intersection of one important highway or street with another presents hazards. Until the public is willing to rate all of these hazards in proportion to their danger and to consider the problem of highway accident elimination as a whole, it can not expect the railways to show any great enthusiasm for the universal or even widespread elimination of grade crossings. The great relief and the only practical relief will come from the education of the user of the highway to the fact that he approaches any grade crossing or other point of danger "at his own risk," supplementing these educational measures with discipline where necessary.

Simple Substitutes for the Hoch-Smith Resolution

A REDUCTION ad absurdum of the Hoch-Smith resolution, if it needed any such thing, has been furnished by John F. Shaughnessy, chairman of the Nevada railroad commission, in his presidential address at the recent convention of the National Association of Railway and Utilities Commissioners at Dallas. After referring to the resolution as a "mandate" to the Interstate Commerce Commission "to give speedy relief to the agricultural and livestock industries" and pointing out that under it the commission has had under way for two years a rate structure investigation divided into eleven parts of which eight cover commodities other than agriculture and livestock, Mr. Shaughnessy suggested a way to give effect to the "speedy" part of his interpretation of the resolution, at least, without awaiting the uncertain results of such a protracted investigation.

He proposes, without even bothering about further legislation, the application of a flat charge of ten cents a ton to all traffic, to be applied by the commission, together with 40 million dollars received by the railroads from the Pullman surcharge, to a 25 per cent reduction in the rates on cotton, grain and livestock. He estimates the amount at 257 millions.

This plan would have a certain advantage over that thus far followed by the commission in some cases of reducing rates under the Hoch-Smith resolution which it had previously declined to reduce for other reasons, without any indication as to where an offsetting advance in other rates is to come from. Mr. Shaughnessy at least points to where the money is before trying to spend it. Also, except as to the surcharge money, the railroads would have no occasion to protest because the philanthropy for the benefit of agriculture was being charged to them.

Probably some shippers would object more loudly than others to the idea of a flat tax per ton and might want to suggest some other basis because some tons are worth so much more than others, but a great many shippers are committed to the idea that freight rates have many sociological functions other than as a charge for transportation service.

However, aside from the fact that the idea is advanced by a railroad commissioner, why should the farmer's dole be measured in relation to freight traffic or railroads at all? The Hoch-Smith resolution was put in terms of freight rates because Congress was about exhausted after failure to agree to some other form of McNary-Haugenism and freight rates were rather used to being regulated in various ways. But there are other large aggregations of money on which some one has already expended the labor necessary to concentrate a multitude of small sums.

Someone has recently figured from the income-tax returns that there were some 30,000 millionaires in the United States in 1926. Why not just charge each of them a few thousand a year and give it to the farmers, omitting, of course, any farmers who may also be millionaires, although not necessarily the millionaires who may also be farmers? And if the number of railroad millionaires in the total is out of proportion to the others let the chips fall where they will.

If we have a ready-made list of millionaires who have already been brought beneath the yoke of the tax-collector why go to all the expense of trying to redistribute the money by tinkering with freight rates by another standard in addition to the long list of those now supposed to guide the Interstate Commerce Commission in deciding what is, for the moment, a reasonable freight rate?

If it is insisted that railroad rates be used as a base, in order that it may come under the head of a regulation of interstate commerce, we might just tax the freight of the millionaires, on the ground that surely they are all prosperous, while all shippers are not.

At any rate Mr. Shaughnessy has the germ of an idea in suggesting a simplification of a process which, intended to relieve the depression in the agricultural industry in 1923 and 1924, may, unless something is done about it, develop into something like the plan of finding the value of the railroads in 1914.

Railway Steamship Operation

EDWARD N. HURLEY, who was chairman of the United States Shipping Board during the war, is advocating the operation of ocean vessels by the railways, as was reported in the *Railway Age* of September 17. The idea has provoked a great deal of discussion, a good share at least of which is favorable. Little attention, however, has been given to the fact that the railroads if they had been let alone would possibly already have been engaged extensively in this business. Turning to the *Railway Age Gazette* of August 30, 1912, we find a report of the passage of the Panama Canal Act which contains the following sentence:

"An officer of the Pacific Mail Steamship Company, which is controlled by Southern Pacific Railway interests, is quoted as saying that the company has decided not to build the four steamships for service between New York and Asiatic ports for which contracts had been drawn up."

The railways, which at the time of the passage of this strange act were beginning to learn something about ships by the operation of coastwise services, were, except in a few isolated instances, forced out of water transportation entirely by its provisions. If now, by reason of a more enlightened public policy, railway operation of ocean vessels is to be encouraged, it naturally follows that the harsh restrictions of the Panama Canal Act should be removed.

Apparently the provisions of the Act must be construed to prohibit railroad ownership of steamships operating through the canal, even if engaged exclusively in handling foreign commerce. It makes it unlawful for a railroad company to "own, lease, operate, control, or have any interest whatsoever * * * in any common carrier by water operated through the Panama canal or elsewhere with which said railroad * * * does or may compete for traffic or any vessel carrying freight or passengers upon said water route or elsewhere with which said railroad * * * does or may compete for traffic."

Of all tonnage under American registry but 45 per cent is engaged in foreign trade. The remainder operates between United States ports. Forbidding the use of the Panama Canal and operation in the larger water transportation trade to the railways, while urging them into the foreign trade field, would make them appear as a catspaw. When the Panama Canal Act became a law, in 1912, the concept of "co-ordinated transportation" was not generally recognized. Prevailing regulatory policy seemed rather to favor any competitive agency which might bring down railroad rates. The "Verboten" sign was tacked on railway-owned shipping for fear that the railways might ruin other water competitors. Nowadays the small likelihood of any such eventuality must be more and more apparent. Co-ordinated transportation, i.e., the utilization of the most economical method or combination of methods for any given transportation job, can come only under common ownership or close co-operation of various methods of transport—railways, motor vehicles, and waterways. Still, if the bogey of railroad entrance into the coastwise trade merely to kill off competition persists, it could be quickly scotched by the establishment of regulation over these rates.

It is not unlikely that some of the marine interests would strongly oppose the lifting of the restrictions against the railroads operating vessels coastwise and through the Panama Canal. However, they must face the facts and the facts are that the obstacles now in the way of railroad steamship operation on a large scale are almost insuperable. Suppose that a railroad should, with present restrictions, engage in water transportation, acquiring a large fleet of vessels. This fleet would have to be held in either the Eastern or Western oceans or divided between them; there could be no easy shifting of vessels from one coast to another, since railroad-owned ships are denied the use of the Panama Canal. Likewise no cargoes could be taken at Atlantic or Gulf ports for Asia, nor from Pacific ports for European destination. Suppose the fleet included some large passenger vessels, not all of which could be profitably employed in the regular carrying trade during a portion of the year. Independent steamship operators in such cases frequently organize long cruises, occasionally even around the world. Such services would be virtually impossible by lines which could not use the Panama Canal. Again, suppose transoceanic business were for the time being light but that coastwise business were good, and rates remunerative. Could a railroad-controlled steamship line long continue in operation when such business was forbidden to it but freely permitted to competitors?

The investment involved in water transportation is heavy and, to be profitable, the operator must be able to keep his ships at work a good part of the time. This involves moving them about from one route to another as business fluctuates. Restrictions such as those contained in the Panama Canal act are at the present time so severe as to set up a powerful obstacle to economic ship operation by railroad companies.

As Mr. Hurley pointed out, however, railroads would have certain advantages in the securing of business for their vessels, both abroad and in outbound routing from American ports. The prospect for profitable operation, however, is not yet conclusively proved. The govern-

ment, in its desire to be rid of its profitless lines, stands in the position of one asking a favor. Logically, it should take the first step in the negotiations looking toward the railroads relieving it of some of its burdens and this first step should be the mitigation of the harsh restrictions of the Panama Canal Act.

The "Capital Charge" and Private Ownership

WE commented last week on the seeming inconsistency of an advocate of government ownership being a member of the Interstate Commerce Commission, which is charged with the administration of the Transportation Act, a law plainly intended to maintain private ownership of railways and afford opportunity for successful private management. Elsewhere in this issue is published practically in full the report advocating government ownership recently made by Commissioner Joseph B. Eastman to the National Association of Railroad and Utility Commissioners. It will be seen, as stated in these columns last week, that Mr. Eastman, after accepting the view that railroads and public utilities perform a function of the state, implies that this function is "degraded by conversion to the ends of private profit" and contends that under public ownership other and less degraded motives could be relied upon to cause efficient management.

Mr. Eastman not only thus deprecates and depreciates the incentive of private profit as a motive to efficient management, but also introduces a specifically economic argument which always is advanced by the advocates of government ownership in one form or another, and which, therefore, especially merits attention. He says: "The advantages of public ownership, as I see them, are low cost of capital; opportunity gradually to reduce or eliminate the capital charge without hardship upon the public in the process; and, above everything else, I am inclined to think, freedom from the valuation nightmare. Under the valuation doctrine the capital charge in the case of privately-owned utilities can apparently never be reduced or eliminated by any sinking fund or other similar provision; it is a perpetual millstone around the public neck; and it may double in weight without any change in the underlying property if the reproduction cost theory is finally sustained."

The argument that the "capital charge" which the public must bear in paying for the service of railroads and public utilities would be less under government than under private ownership is, of course, based on the unquestionable fact that a sound government, whether municipal, state or national, can get capital at a lower rate of interest than a private corporation, the reason being that it can always raise enough money by taxation to pay its interest no matter how much it wastes or loses. It does not follow, however, because a government can borrow a dollar of capital for perhaps 4 per cent interest, while a private corporation must pay 5 per cent or more for it, that the total "capital charge" the public will have to pay a railroad or public utility for a given amount of service will be less under government than private ownership. The case is much less simple than that.

How Will Capital Be Used?

There must also be considered with reference to the total capital charge the question of whether the amount of capital invested to render a given service will be more or less under government than private ownership. The investment of capital is a function of management and one of its most important and difficult functions. There can be inefficiency and waste in capital expenditures as well as in operating expenditures. If, for example, the government, to make a certain improvement in a railway, would spend $100,000 and pay interest at 4 per cent, the annual capital charge would be $4,000. If a private company would spend only $50,000 on the same improvement, and pay 6 per cent, the capital charge would be only $3,000.

There is still another and much more important question to consider. Capital is invested not only to make it possible to render additional service but also to save labor, fuel and materials, and thereby offset advances in wages and prices, or actually reduce operating expenses. No good business man, whether in the railroad or any other industry, ever considers separately investment and operation. Knowing that increased investment will make necessary the payment of additional interest or dividends, he always considers the proposed investment in connection with its probable effects on the amount of business it will enable him to do and the effect it will have on his operating costs. When, therefore, Mr. Eastman advocates government ownership as a means of reducing the capital charge, almost without reference to the close relationship between investment and operation, he ignores one of the most vital parts of his subject. Out of each dollar the railways earned in 1926 about 73 cents was used to defray operating expenses and 6 cents to pay taxes, while only 19 cents was left for "net operating income," which represented the burden of "capital charges" upon the traffic handled. Obviously, the difference between the rates of return the government and private companies must pay upon capital is of small importance compared with the questions as to whether capital would be as thriftily and efficiently invested, and whether operating expenses would be relatively as small, under government as under private ownership.

Reducing the Capital Charge

Mr. Eastman says that under public ownership there would be "opportunity gradually to reduce or eliminate the capital charge." He plainly implies that the capital charge has not been reduced under private ownership of railways and that there is no opportunity to reduce it. This well illustrates how men often adopt a theory and advocate some policy based upon it without investigating to ascertain whether the theory is supported by facts. The capital charge of the railways, like their operating expenses and taxes, is borne by the traffic handled by them; and it has actually declined in proportion to the volume of traffic handled ever since statistics with which to measure it have been kept.

Their traffic consists principally of freight and passengers, and the units by which the volume of it is measured are one ton carried one mile and one passenger carried one mile. It is commonly assumed that carrying a passenger a mile is roughly equivalent to carrying three tons a mile, and by combining the two kinds of traffic in the ratio of three to one we get what are called "traffic units." The railways were under government operation in 1918 and 1919. Omission of the abnormal statistics of these two years leaves us those for 35 years from 1890 to 1926 which may be divided into five periods of seven years each, the last of which embraces the years since the railways were returned to private operation. In the accompanying table are given statistics showing the average investment, net operating income (including government guarantees paid in 1920), operating expenses and total operating revenues of the railways annually in each of these seven-year periods

per 1,000 traffic units, to which are added corresponding figures for Class I roads in 1926.

Average Railway Investment, Net Operating Income, Operating Expenses and Operating Revenues per 1,000 Traffic Units, 1890 to 1926

	Invest-ment	Net. op. inc.	Op. ex.	Total op. rev.	Per cent net. op. in. to total rev.
Seven years, 1890-1896, incl...	$70.80	$2.67	$6.01	$8.96	30 p.c.
Seven years, 1897-1903, incl...	55.40	2.52	5.25	8.02	31 p.c.
Seven years, 1904-1910, incl...	43.56	2.34	5.43	8.06	29 p.c.
Seven years, 1911-1917, incl...	41.37	1.96	5.54	7.93	24.5 p.c.
Seven years, 1920-1926, incl...	42.49	1.86	9.57	12.08	15.5 p.c.
Year 1926	$42.17	$2.21	$8.49	$11.60	19 p.c.

These statistics will repay careful study by anybody who really desires to know the economic history of our railways since 1890. Their total investment has constantly increased, but the figures given in the first column of the table show that the amount of traffic handled has increased relatively so much faster, that while the investment per one 1,000 traffic units in the first period averaged $70.80, it has averaged, since the railways were returned to private operation, only $42.49, a decline of 40 per cent. Net operating income earned per 1,000 traffic units in the first period of seven years averaged $2.67, and declined in every subsequent period until in the last it averaged only $1.86. Thus the capital charge per unit of traffic, measured in money, declined more than 30 per cent.

This, however, states very inadequately what actually occurred. Most of the earnings of the railways are derived from freight rates. Freight rates are applied to commodities. The average wholesale price of commodities in the seven years ending with 1926 was 119 per cent higher than in the seven years ending with 1896; 110 per cent higher than in the seven years ending with 1903; 77 per cent higher than in seven years ending with 1910, and 43 per cent higher than in the seven years ending with 1917. Thus, while measured in money, the railway capital charge per unit of traffic handled was constantly declining, the value of the commodities carried increased, with the result that, in proportion to the average wholesale price of commodities, the railway capital charge, in the seven years ending with 1926, was only 31 per cent (or about one-third) as great as in the seven years ending with 1896. Relatively, therefore,—that is, in proportion to the prices of the commodities carried—the railway capital charge declined between these periods approximately 70 per cent. In view of these facts it is astonishing that one presuming to speak with authority regarding railway matters should imply that under private ownership of railways the "capital charge" cannot be reduced.

Trend of Operating Expenses and Total Earnings

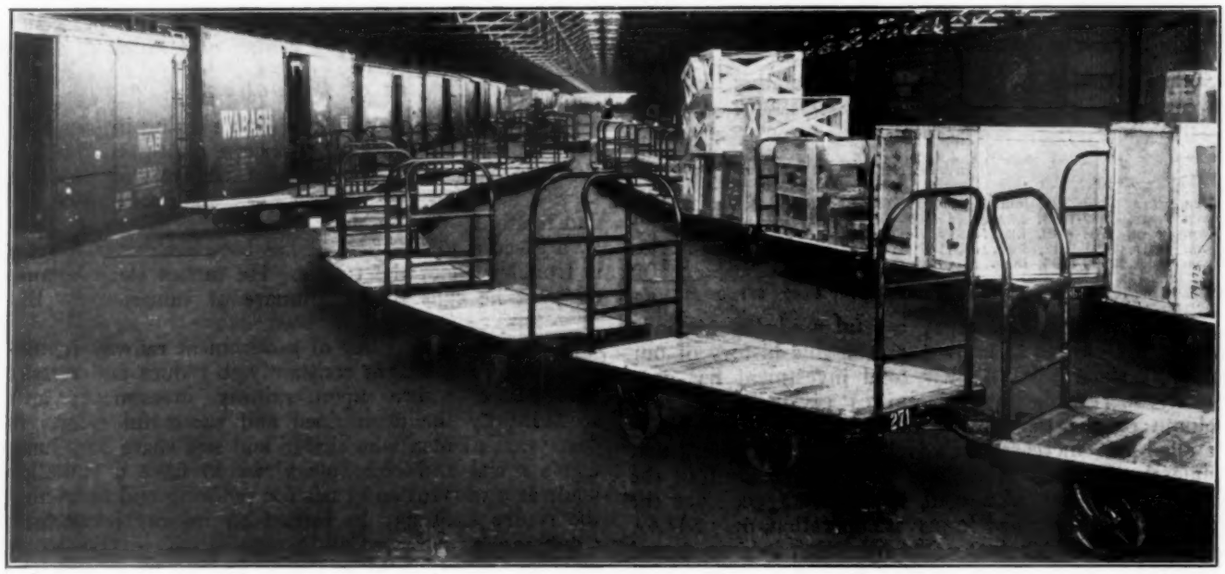
The statistics given in the table show also what was meantime the trend of operating expenses and total earnings, relatively, to the volume of traffic handled. Operating expenses per 1,000 traffic units at first declined, and then began to increase, being in the seven years ending with 1926 about 59 per cent higher than in the seven years ending with 1896. This was a small increase compared with the average increase of 119 per cent that occurred in commodity prices and the much greater increase that occurred in average wages. There was an actual decline in total earnings per 1,000 traffic units until after the adoption of government operation, and the increase in the last period over the first period was only 35 per cent. In the first three periods the capital charge for railway service averaged about 30 per cent of the total earnings, in 1911-1917, inclusive, 24.5 per cent; and in 1920-26, inclusive, only 15.5 per cent; while in 1926 it was 19 per cent.

The "Nightmare of Valuation"

The facts given demonstrate that nothing in past railroad history warrants the concern expressed by Mr. Eastman regarding the "capital charge" for railway service under private ownership because both absolutely and relatively the amount of it that has had to be borne by a given amount of traffic has been declining. But he is troubled about the future. He cannot sleep because of what he calls the "nightmare of valuations." But how has this nightmare been evoked? It has been evoked, first, by a policy of government railway regulation which has sought constantly to reduce and restrict unduly the return upon railway investment; and, secondly, by the determined and successful efforts in past years of men who shared and still share Mr. Eastman's social and economic views to have a valuation made as a warrant and basis for reducing and restricting the return that may be earned on railway investment. Suppose the Supreme Court should justify Mr. Eastman's apprehensions by holding that in making its valuation of railways the Interstate Commerce Commission must give effective weight to present day costs. This would, of course, mean that the railways were legally entitled to earn a larger net return. Let us make the very extreme assumption that it would legally entitle them to earn 50 per cent more net return, or $3.31 net operating income per 1,000 traffic units, instead of the $2.21 earned in 1926. The average increase in rates this would justify would be about 10 per cent, and would make net operating income about 26 per cent of total earnings, as compared with the 30 per cent that it averaged in the twenty-one years, 1890 to 1910, inclusive. Even then the increase in the capital charge would not be anywhere near in proportion to the advances that have occurred in wages and prices.

But does any railway officer believe that any valuation decision the Supreme Court may render will indirectly result in any such advance in rates? We do not think so. Why, then, are the railways seeking a basis of valuation that will give effective weight to present day costs? Because, in view of their past experience with regulation by the Interstate Commerce Commission, and of the commission's decision in the O'Fallon case, they apprehend that, without a decision by the Supreme Court that will entitle them to a valuation giving effective weight to present day costs, the commission will continue to so regulate rates that the return earned on railway investment will continue to decline, both absolutely and relatively; that, in consequence, the railways will again become unable to raise adequate capital; and that their development will decline as it did before the war.

There would be no "nightmare of valuation" if the commission and radical statesmen had not successfully advocated valuation legislation before the war, and if the commission had not, for 20 years, persisted in following a policy of regulation which has disregarded the fact that a reasonable capital charge is essential to the provision of adequate and economical transportation under private ownership. The present struggle over valuation has not been caused by an increase in the capital charge for transportation because it has been steadily declining. The struggle has been made unavoidable by the fact that the capital charge has been, by regulation, reduced too much, and apparently will continue to be so reduced in future as to imperil private ownership unless a decision can be secured from the highest court in the land that will arrest its downward trend.

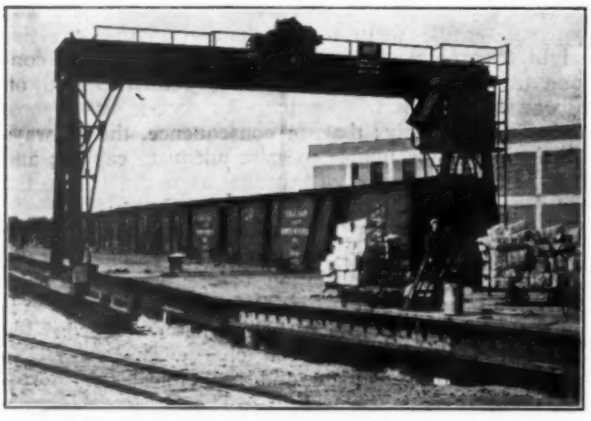


Looking East on Platform Between Feeder Tracks at North Side of House

Country's Largest Transfer Station Is Placed in Service

Chicago & North Western completes structure covering over 20 acres with capacity of 690 cars

ON October 1, the Chicago & North Western placed in service in the outskirts of the Chicago terminal zone what is said to be the largest freight transfer station in the country. The area under roof amounts to 20.4 acres, with a capacity of 690 cars at one setting. The station, which involves an expenditure of $800,000, is located at Proviso, Ill., 13 miles from the business center of Chicago, and is designed



A Gantry Crane and Platform Are Located West of the Transfer Station

to handle all l.c.l. freight orginating in or destined to Chicago, including that interchanged with Chicago connections, as well as the operations of a small transfer station with a capacity of 30 cars daily, which has hitherto been maintained at West Chicago, Ill.

The location was chosen because Proviso is the point from which all of the company's main freight lines diverge in leaving Chicago and because it is also the most accessible point from the larger freight stations in Chicago. For the same reasons, this location was also selected as the site of the outer terminal yard, of which several units have been completed and placed in operation and which ultimately will have a capacity of 26,000 cars, with the necessary engine terminal and other facilities.

The site of the transfer station, which forms a part of the terminal yard layout, lies adjacent to and north of the main line to Omaha. This yard is also the southern terminus of what is known as the Des Plaines Valley line which was built in 1911 for the purpose of affording access from the various main lines of the company entering Chicago to a terminal yard which was built at Proviso. This Des Plaines Valley line extends from a connection with the main freight line to Milwaukee near Blodgett, Ill., crossing and connecting with the main line to St. Paul and Minneapolis at Des Plaines. It lies wholly outside the limits of Chicago and avoids the congestion which would be encountered in the city. Connections are made with the Indiana Harbor Belt and the Baltimore & Ohio Chicago Terminal at the east end of the yard at Proviso.

Advantages Gained by the Transfer House

The object of the transfer house is to expedite the dispatch of l.c.l. merchandise and to effect a saving in cars by consolidating the shipments to any one destination instead of loading separate cars at different freight

houses as under the former arrangement. This not only leads to heavier loading but also makes possible the loading of full cars for a number of points or divisions which could not be done under the methods formerly in use. In certain cases, also, it is possible to load freight for certain stations in cars which contain freight for other stations beyond those points on the same division, which cars will be set out at the station by merchandise trains in time to permit the unloading of the freight for that point before the arrival of the way freight, which then picks up the cars and "peddles" the remaining freight at the other stations. The consolidation of the loading at Proviso thus makes possible a considerable saving in time in the delivery of many cars and reduces materially the amount of transfer work formerly done at Clinton, Iowa, Tama and various other points on the line. A saving of about 112 cars daily will also be effected by the heavier loading made possible by the new arrangements.

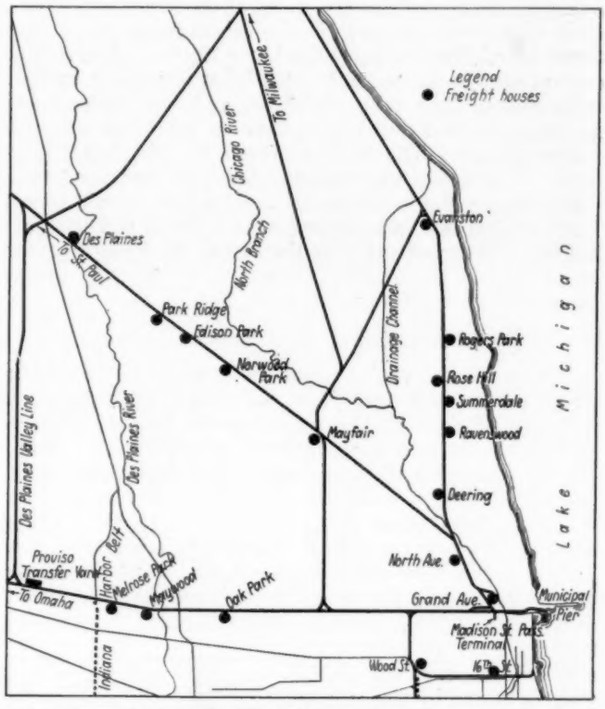
The time of switching the cars to the proper trains is also expedited since the cars are so spotted at the platforms as to group the cars for certain destinations or divisions. As the transfer station is adjacent to the departure yard and as air lines have been provided to permit the charging of the air brake reservoirs of the cars before placing them in the trains the elapsed time between the "pulling" of the tracks and the departure of the trains in which the cars are placed is shortened materially. The merchandise trains are scheduled to leave as soon as the cars from the transfer house can be placed in them.

Arrangement of the Transfer House

The transfer station consists of 12 longitudinal bays, each containing a pair of tracks separated by a platform level with the car floors. The outer pair of tracks on each side of the structure holds the cars containing the freight to be transferred and are known as feeder tracks. These tracks have a total capacity of 120 cars and are connected with leads at each end to facilitate switching, since the cars must be removed and replaced promptly with other cars as soon as they are made empty. This unloading is accomplished rapidly, as all that is necessary is to load the freight on trailer trucks, each trailer being loaded for only one car. The platforms between the feeder tracks are 40 ft. wide to provide ample space for the trailers and for their assembly into trains by the tractors which haul them to the outgoing cars.

The other tracks in the house hold the cars into which the outgoing freight is loaded. These tracks enter the house at the east end and terminate at massive concrete bumping posts near the west end of the structure, sufficient space being left at this end to provide a continuous trucking platform across the house, which can also be used for tail-board delivery if the need for such facilities should develop in the future. The platforms between these tracks are 22 ft. wide. A platform with 10 cars capacity, served by a 10-ton gantry crane, is located just west of the west end of the house.

All platforms are of wooden construction with a subfloor of 2-in. hemlock and a wearing surface of 7/8-in. factory maple flooring. The floor is supported on 2-in. by 10-in. fir joists spaced 19 in. center to center and these are carried on 6-in. and 8-in. by 14-in. wooden girders resting on treated pile heads, spaced at 8-ft. intervals longitudinally with the track. The 40-ft. platforms have five lines of girders, and the 22-ft. platforms

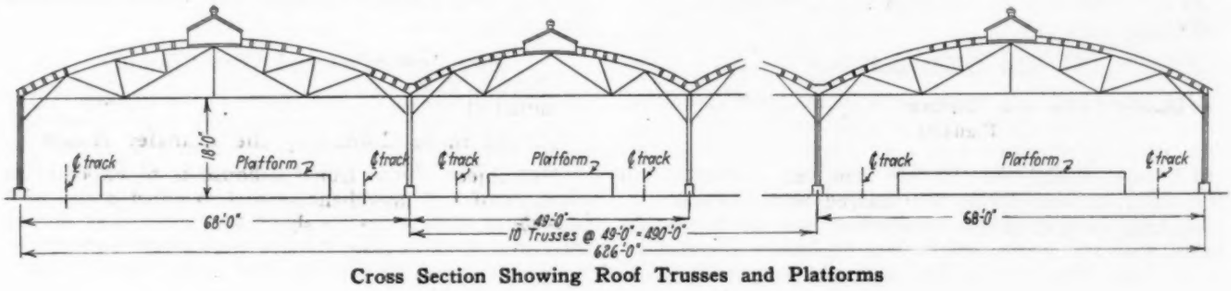


Location of C. & N. W. Lines in Chicago and Vicinity

three lines, the outer girders in all cases being 6 in. by 14 in., while the intermediate girders are 8 in. by 14 in. On those portions of the platform where the flooring is exposed to the weather, the maple is treated with a moisture repellant. Woven wire netting is fastened over all exposed faces of the platforms to prevent the accumulation of paper or other rubbish which would create a fire hazard. Skylights over the center of each platform and electric lights with enameled reflectors supply ample light at all times.

Lift Bridges Span House Tracks at Center and East End

To shorten the haul from the feeder tracks, lift bridges span the inner feeder tracks at the center and both ends of the platforms and all of the other house tracks at the center and east ends of the platforms. These

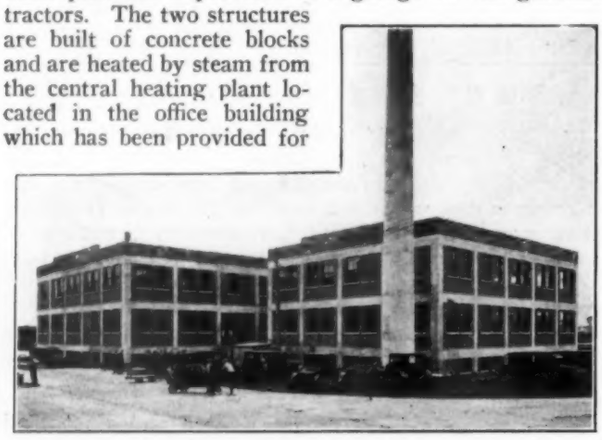


Cross Section Showing Roof Trusses and Platforms

bridges are built up of structural steel and have a floor similar to that of the platforms. They are 19 ft. wide by 32 ft. long and are raised by electric power to clear the tops of the cars when switching is being done, having a vertical lift of 13 ft. 7 in., which gives a vertical clearance of 16 ft. 8 in. above the base of rail. They rest on concrete piers when at the platform level and the raising is accomplished by four screw posts, one under each corner, which are actuated by suitable shafts and gears driven by electric motors set in pits between the tracks. The posts lower into wrought iron pipe casings which are sealed at the lower end to exclude moisture, and when in the raised position are protected by telescoping galvanized iron sleeves. A cast iron control box is set under the platform near each bridge, with its lid flush with the floor, and the controls are so arranged that any bridge may be raised or lowered independently. The time required for the full lift is four minutes and an indicator board in the foreman's office shows the position of the bridges at all times. Each bridge is also equipped with a hand windlass attached to the roof posts at the center of the bridge for operation in case of the failure of the electric current or motor.

Foreman's Office and Service Rooms

House tracks Nos. 13 and 14 extend only half the length of the structure from the east end, terminating just east of the east line of the center row of bridges, to provide additional space between tracks 12 and 15 for the foreman's office and various service rooms, these latter including a room for the repair and storage of car heaters, a cooper shop, a checker's room, a sealer and carder's room, a storage room for charcoal and saw dust, a lunch room, a wash room, and two toilets, one at each end of the building. A separate building on the same platform is provided as a garage for the gasoline tractors. The two structures are built of concrete blocks and are heated by steam from the central heating plant located in the office building which has been provided for the agent and his clerical force. The steam pipes, water pipes and pneumatic tubes are carried in a concrete duct four feet wide and six feet high which connects the two buildings.



The Office Building Is of Reinforced Concrete Construction

The Office Building

The office building, located west of the transfer house, from which it is separated by a wide concrete driveway, is a two-story structure with a basement under its entire area. It is really two separate buildings, connected at the different floor levels by enclosed passageways. It is of reinforced concrete construction with curtain walls faced with red brick, and backed by hollow tile and is so designed that two additional stories may be built if desired. The southerly portion, 80 ft. by 160 ft. is used for office purposes, while the northerly wing, 60 ft. by 80 ft., provides storage room for records.

The first floor of the office building proper contains private offices for the agent, assistant agent and cashier, a large fireproof vault for records, and toilet rooms, while the rest of the space constitutes a large open office for bill clerks and other clerical help handling inbound business. The arrangement of the second floor is similar to that of the first, except for the private offices, and is occupied by the forces handling outbound business. All desks in the offices are of steel construction, of uniform design. Ample window space supplies abundant natural light, while the provisions for electric lighting are exceptionally good. The easterly half of the basement under this portion of the building is occupied by a cafeteria, while the remainder is used as additional storage space for records.

The Offices Are Equipped with Steel Desks

The two main floors of the northerly wing of the building are given over entirely to the storage of records, which are filed on steel shelving. The basement contains the steam heating plant, telephone switch boards and the mechanism for the pneumatic tube systems connecting the office building with the yards and the transfer house. A complete machine-switching telephone system connects all the activities at this point and also provides connection with the company's telephone system in Chicago. The electric current for lighting and the various electrically operated facilities is obtained from the lines of the Public Service Company of Northern Illinois and all distribution lines are carried in underground ducts.

Other facilities around the plant include an incinerator for the disposal of inflammable rubbish and aseptic tank for sewage. An icing station, equipped for the manufacture of 200 tons of artificial ice daily, will be built east of the transfer station, together with a storage house of over 5,000 tons capacity. The plant will be operated by the Continental Ice Company, Chicago, and will be equipped with modern accessories for the prompt handling of the work.

Fire Protection and Water Supply

Special attention has been given to fire protection, for which a separate water supply has been developed. Ninety-six fire hydrants are located in and around the transfer house, 83 of these, each with 50 ft. of hose, being located in receptacles under the platforms, with trap doors flush with the floor to permit easy access. Each trap door is plainly marked to show its location. A concrete fire road extends from a paved public high-

way to and along the full length of the south line of the building to permit access of the fire departments of neighboring municipalities in cases of emergency.

The water for fire protection is stored in an open reservoir of 1,000,000 gal. capacity excavated in the ground just south of the tracks along the south side of the transfer house. The water is supplied by a small creek which traverses the property and can be supplemented from a well, 1,500 ft. deep which has been drilled nearby to provide water for drinking and other sanitary purposes in the office building and transfer house. Two fire pumps are installed, each with a capacity of 1,000 gal. per min., driven by 100-hp. electric motors with automatic control so that when the pressure drops below the requirements the pumps will start and restore it to that point. The water for drinking is distributed through a separate pipe line from a 30,000-gal. steel tank on a 75-ft. steel tower. The water obtained from the well is pure but is too hard to be suitable for boiler use, soft water being encountered at a depth of 2,000 ft.

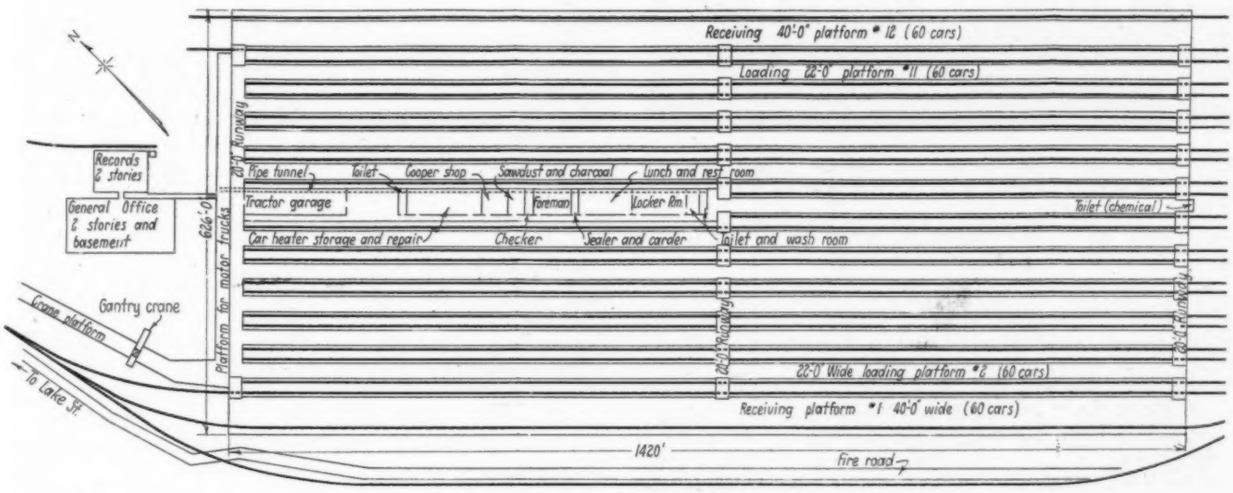
Operation of the Transfer House

The North Western operates a total of 18 freight houses on its different lines in Chicago and the immediate vicinity and the freight from all of these, including the freight houses at Evanston, Des Plaines and the stations between Chicago and Proviso, is handled through the Proviso plant. These stations are maintained as usual and the freight received there is loaded direct into cars as it is received, without sorting except at the larger stations where sufficient freight is received to insure full cars for certain destinations, in which cases cars are loaded to go forward without passing through the transfer house although the contents will be billed at Proviso. The cars to be transferred, both from the freight houses and those received from connections, are hauled to Proviso. No special equipment is provided for the transfer station between the freight stations and Proviso, cars being selected which have tight sides and roofs to protect the lading from the weather but which for other reasons are not suitable for grain. The freight is loaded in the transfer cars in such a manner as to place as much as possible in each car without delaying the loading or the unloading.

At present, cars are dispatched from the receiving stations three times daily: at 11 a. m.; 3 p. m. and after the closing of the stations for the day, dead freight being received until 4:30 p. m. and perishable freight until 5 p. m. Consideration has also been given to the advisability of supplementing this service with trucks under certain conditions for such service could be established easily since Lake street, a paved highway from Chicago, adjoins the railroad's property on the north. The total number of merchandise cars handled daily by the North Western is approximately 600 and the capacity of the new house is 3,500 tons daily, working single shift, although it is felt that this can be increased to 4,000 tons after the plant has been in operation for a while.

The locations of the cars to be loaded for the different destinations are indicated by numbers showing the "run" and "box", the run referring to the number of the track, beginning with No. 1 at the south side of the house, and the box indicating the position of the car from the west end of the tracks. Thus, run No. 6, box No. 18 fixes the location of the eighteenth car from the west end of track No. 6. The track numbers are shown at each cross platform by wooden boards suspended from the ceiling with the track number painted on them and each car is marked with chalk to show the run and box number. When the loading of a trailer is completed a card is affixed to its end on which is shown the run and box numbers to which it is to go, together with the number of pieces loaded. When the trailer arrives at the car into which the freight it carries is to be loaded the number of pieces is checked and the card is deposited in a tin box affixed to the side of the car.

The tractor trains are each in charge of a motorman and a conductor, the latter assembling the trailers on the feeder track platforms, and dropping them off at the proper cars, after which they are run into the cars, unloaded and again placed on the platform to be picked up by a tractor on its return trip. Tractor trains containing as many as 35 trailers are hauled, although ordinarily the maximum is from 15 to 20. The tractors, of which 25 are in service, were furnished by the Clark Tructractor Company, Buchanan, Mich., while the 2,000 trailers were supplied by the Mercury Manufacturing Company, Chicago. All of the tractors and trailers are equipped with Mercury self-couplers to expedite the assembling of the trains.



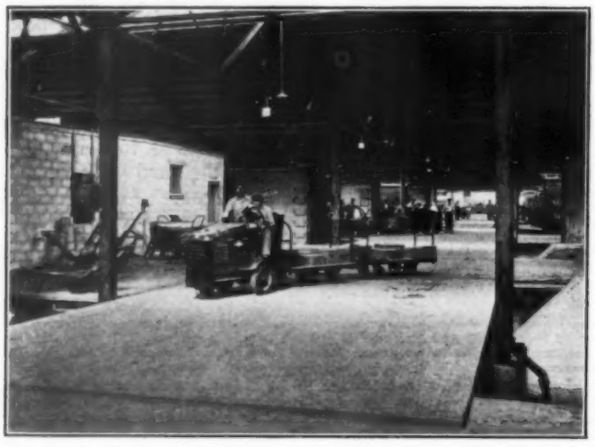
Floor Plan of Transfer Station

Features of Construction

The construction of the transfer house was begun in March of the present year. The land on which it is built lies from two to six feet below the adopted grade line and was raised to the desired level with sand from

Cary, Ill., and granulated slag from the Illinois Steel Company's mills at Gary, Ind., and South Chicago. The material was hauled in gondola cars and unloaded by plowing off when it was loaded in cars with swinging sides, or by locomotive cranes operating clamshell buckets when in cars with fixed sides. Owing to the fact that slag weighs only about one-half as much as sand, its use proved advantageous since much larger quantities could be loaded on the cars.

The frame of the structure consists of steel columns supporting steel bowstring trusses spaced 20 ft. center to center, at right angles to the longitudinal axis of the building. The 2-in. by 12-in. roof purlins are toenailed to a 2-in. by 8-in. plank bolted to the top chord of the trusses and the roof is 1-in. by 12-in. D. & M. sheathing covered with three-ply roll roofing with the strips applied parallel to the trusses. A skylight, eight feet wide with ¼-in. ribbed wire glass, extends the length of the building along the center of each roof truss, coinciding with



Looking North from Center of House Along Runway Bridges. End of Service Building on Left

the center line of the platforms, with 12-in. ventilators spaced at 40 ft. intervals.

All posts supporting the roof trusses, except those carried on the concrete piers for the lift bridges, are supported on creosoted piles driven to hardpan which lies about 15 ft. below the surface of the ground. The piles used were some that had been salvaged from dock construction on Lake Michigan and which were sound when removed. After allowing them to dry out they were treated with creosote and are expected to have a long service life in their new sphere of duty, where their use effected large savings in time and money.

The same considerations led to the adoption of wooden platforms supported on creosoted pileheads instead of concrete platforms. Since the platforms are entirely under cover and hence are not exposed to conditions expediting decay, it was felt that the length of service to be expected from this type of construction would not warrant the increased expenditure necessary for concrete platforms, while the maple flooring presents an excellent surface for trucking.

Some difficulty was experienced in setting the first of the iron pipe casings for the screw posts of the lift bridges, which of necessity must be accurately located and perfectly plumb. After some experimenting the holes were bored with a Buda-Hubron earth drill with the result that they were properly placed at little cost. Rock was struck in a few of the holes near the northeast corner of the building, which required blasting.

The station has been designed and constructed under the direct supervision of W. J. Towne, chief engineer of the North Western, who was also a member of a committee composed of representatives of the operating, traffic and engineering departments which made the studies for the facilities required at the terminal yard. G. A. Saint, assistant engineer, was in direct charge of the construction, of both the yard and the transfer station, the latter having been built under contract by Peppard & Burrill, Minneapolis, Minn.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended October 22 totaled 1,128,486 cars, a decrease of 72,455 cars from that of the corresponding week of last year and an increase of 7,809 cars as compared with loading in the corresponding week of 1925. Loadings of grain and grain products and live stock were heavier than a year ago but decreases were shown in all other commodity classifications. Coal loadings amounted to 193,272 cars, as compared with 226,804 cars in the corresponding week of 1926, and ore loadings to 45,036 cars as compared with 65,295. Loadings of miscellaneous freight dropped to 442,496 cars from 455,816 a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

WEEK ENDED SATURDAY, OCTOBER 22, 1927

Districts	1927	1926	1925
Eastern	242,826	266,416	251,220
Allegheny	209,436	241,510	212,617
Pocahontas	57,606	62,516	57,964
Southern	163,722	169,323	161,463
Northwestern	175,938	183,471	168,700
Central Western	185,755	184,090	182,742
Southwestern	93,203	93,615	85,971
Total Western Districts	454,896	461,176	437,413
Total all roads	1,128,486	1,200,941	1,120,677
Commodities			
Grain and grain products	60,378	54,315	48,424
Live stock	40,670	40,099	41,193
Coal	193,272	226,804	189,156
Coke	9,388	13,087	13,895
Forest products	67,900	72,954	71,861
Ore	45,036	65,295	50,508
Mdse., l. c. l.	269,346	272,571	271,759
Miscellaneous	442,496	455,816	433,881
October 22	1,128,486	1,200,941	1,120,677
October 15	1,119,872	1,202,780	1,106,009
October 8	1,100,552	1,174,928	1,106,036
October 1	1,126,390	1,180,049	1,113,283
September 24	1,125,868	1,175,407	1,121,025
Cumulative total, 43 weeks	43,346,804	43,892,838	42,338,949

The freight car surplus for the period ended October 15 averaged 153,317 cars, as compared with 142,678 cars for that ended October 8. The total included 83,664 box cars, 47,122 coal cars, 13,059 stock cars and 2,021 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended October 22 reached a new high record of 87,613 cars, the previous high mark being 85,244 cars for the week ended October 16, 1926. It was an increase of 10,466 cars over the previous week and an increase of 5,582 cars over the same week last year.

	Total for Canada			Cumulative totals to date	
Commodities	Oct. 22, 1927	Oct. 15, 1927	Oct. 23, 1926	1927	1926
Grain and grain products	25,625	15,222	21,171	332,184	346,665
Live stock	3,442	3,740	3,160	92,943	90,250
Coal	8,570	9,122	9,277	287,175	244,811
Coke	533	871	466	14,605	15,398
Lumber	3,576	3,764	3,618	159,772	154,053
Pulpwood	1,259	1,384	1,544	129,133	112,550
Pulp and paper	1,966	2,266	2,143	92,701	100,100
Other forest products	3,460	2,919	3,012	128,112	130,004
Ore	1,898	1,861	2,108	70,966	73,443
Merchandise, l. c. l.	18,397	18,376	17,962	723,708	688,411
Miscellaneous	18,887	17,622	17,570	630,270	602,244
Total cars loaded	87,613	77,147	82,031	2,661,569	2,557,929
Total cars received from connections	38,844	37,852	40,036	1,586,299	1,570,478

Pro and Con of Government Ownership

Commissioner Eastman's report favoring that policy, and majority report opposing it, as presented at railroad commissioners' convention

AMONG the most interesting and significant reports presented at the annual convention of the National Association of Railroad and Utilities Commissioners at Dallas, Tex., on October 18-21, were those of the Committee on Public Ownership and Operation. These reports were referred to in the *Railway Age* of October 29 (pages 825 and 844). A majority report opposing government ownership was made by Commissioners H. H. Corey (Ore.); Richard T. Higgins (Conn.), and Almon Ing (Mo.). A minority report favoring government ownership was written by Commissioner Joseph B. Eastman of the Interstate Commerce Commission.

The views expressed in these reports are published below at sufficient length to give the reader fully all the arguments presented in them.

The Argument Against Government Ownership

The conclusion reached by the previous reports (of the committee) is that public ownership and operation of public utility plants is not in the general public interest and not at all desirable. Private ownership and operation under public regulation is declared to be logical, just and equitable, and the best system for conducting the business of public utilities so as to enable them to render the maximum benefit to the public and to encourage to the fullest degree efficient and business-like operation of the utilities. Summing up the more salient basic principles enunciated in previous reports of this committee and upon which the conclusions therein reached were based, we find it to be the consensus of opinion that private operation has made America pre-eminent in public utility service. This is due, no doubt, to the fact that there has been little government interference with legitimate private business. This is as it should be and is absolutely essential for the proper protection of the citizen in his enjoyment of life, liberty and the pursuit of happiness. Truly "That people is best governed who is least governed."

Public operation of public utilities cuts deeply at the heart of our American system of business and government. Our system of private ownership and operation has been brought about by evolution based on ideas which permeated our whole life and methods of thought. In this country the development and conduct of our industries was wisely left to the initiative of private citizens, and our conception of the relation of government to business has been in the main the simple one that government existed merely to prevent the rights or activities of one man from encroaching upon the equal rights of another. The citizens' rights to life, health and happiness are interwoven with the countless similar rights of their fellowmen.

For the protection of these rights we have to depend to a far greater degree upon federal, state and municipal regulations than our ancestors did who lighted their homes with candles made by themselves, who supplied their own water from wells or springs, whose only means of communication and transportation was afforded by canoes, horses or ox drawn vehicles; manifestly they had very little need of protection from encroachment by their neighbors.

Today, however, we find our population in congested districts deriving their sustenance of life, including heat, light, power and water from far distant sources. This necessitated ingenuity, expert knowledge and vast amounts of capital. To avoid waste, managers followed slowly standardized and well understood channels, and the public wisely left the construction and operation to private capital and private operations. This policy is fast developing through sale of securities by public utilities to the general public into a policy of public ownership and private management.

Unquestionably, this will lead to the greatest benefit to the public from a financial point of view and will afford a more efficient and reliable service.

Private Operation Preferable

We find no better case in support of private operation of public utilities than that contained in the report of the utilities committees of the National Chamber of Commerce for local transportation. That committee's investigation of street railway service as performed in Seattle and San Francisco shows that the public has not been benefited by municipal operation. Massachusetts affords a good basis for comparing the relative merits of private and municipal control. A comparison was made by said committee between 17 public and 18 privately operated electric utilities. In every count the advantage is with the private concern.

Excluding taxes, operating expenses in the public plants exceeded those of the private plants by 20 per cent. In the manufacture of current the cost to the public plant was found to be more by 33 per cent per kilowatt hour than to the privately owned plants. The distributing of current cost 20 per cent more. Labor costs were 53 per cent more and costs of fuel 13 per cent more. The labor efficiency of the public plants as determined by the current per employee was 26 per cent below that of the private concerns, while the loss of current through leakage showed an advantage in favor of private business of 31 per cent.

The conclusions of said committee bear out the general conclusions found in the previous reports of the Committee on Public Ownership and Operation, that general management and supervision are found to suffer with

public administration, and the period of service of public employees is generally brief, due to the fortunes of politics. The reward of labor is generally less in public employ, and public officials too often find that they are bound by laws or practices that do not permit of the discretionary power that may be exercised in private employment.

As a general thing, utilities owned and operated by the public furnish inferior service to that furnished by privately owned and operated utilities. They are on a lower level generally than the privately owned corporations, and as a rule they are slow in responding to new discoveries and new methods and often fail to supervise their equipment while discriminatory rates are as flagrant as they were prior to regulations in private plants.

The low rates sometimes charged by publicly owned plants are not always due to low costs of production, but largely in one way or another, upkeep and other costs are shifted from the consumer, as such, to the taxpayer, as such. Often the method of bookkeeping as practiced by public plants fails to reflect the true results of their operations. This may be due in some respect to the fact that all men are not capable of managing public utilities, yet all are eligible to public office.

All privately owned public utilities begin with systematic engineering plans of construction work, and there arises the first economy in favor of private operations. In organizing the staff to design and build, merit and efficiency alone are considered, and each man is selected and each move is made to secure the largest, quickest and safest return for the money expended. Political considerations do not enter.

In private enterprises promises for efficient service can be made and an incentive to active and successful effort can be maintained. A competent employee is recognized and rewarded and promotion is sure and easy under private operations. Throughout the business world the best service is rendered when there is hope of reward, and the best commodity is produced when there is hope of profit. Where reward and profit are lacking, service and commodity depreciate in value. The rewards of public life are dubious and the profits are not forthcoming by honest means. The losses due to extravagance and misdirected efforts of public operations of utilities will represent enormous dividends on properly applied capital and generally a plant can be built and operated at less cost by private capital than by public funds. All of these things we believe, go to make public operations of public utilities undesirable.

Commissioner Eastman's Argument for Government Ownership

The majority seem to feel, if I read their report aright, that public ownership and operation of public utilities would mean an entry by the government into the field of private business. There is no ground for fear on that score. These industries are very properly called not private, but *public* utilities. They perform functions of the state. This has been recognized from the earliest days. I need rely upon no other authority than the Supreme Court of the United States. In *Smyth v. Ames,* 169 U. S. 466,544, the court said: "A railroad is a public highway, and none the less so because constructed and maintained through the agency of a corporation deriving its existence and powers from the state. Such a corporation was created for public purposes. It performs a function of the state. Its authority to exercise the right of eminent domain and to charge tolls was given primarily for the benefit of the public."

The question of public ownership and operation is, therefore, not one of theory respecting proper governmental functions, but simply a question of practical expediency. Will better results be obtained if the state performs these governmental functions directly or if it farms them out for private enterprise to perform under public regulation? The question in this country is now generally answered in favor of direct action by the state in the case of roads and bridges, water supply, sewage disposal, and fire protection, for example, but not in the case of such governmental functions as railroad, gas, electric, and telephone companies perform. Before I undertake to discuss this very practical question, however, permit me to indulge in a word of caution.

The question is peculiarly one in which prejudice is likely to play a part, prejudice which may be and usually is quite unconscious. Aside from religion, there is perhaps nothing that so excites prejudice as the fear of being separated from the opportunity for profit. Under public ownership and operation of railroads and other public utilities the field for profit on the part of bankers would unquestionably be curtailed very materially. The officers of the private companies fear that they would be displaced or their salaries reduced. Certain of the directors may fear the loss of the lucrative opportunities which grow out of advance knowledge of coming corporate events. Those who furnish the private companies with supplies or services, often under the generous guardianship of holding companies, fear interference with existing profitable relationships. Those who perform functions which are not strictly public but may be affected with a public interest, such as insurance, fear that more direct public interference with their affairs may be encouraged. Even we ourselves, as a part of the present system of private operation under public regulation, may possibly fear interference with our jobs. All these, and many others which might be mentioned, are sources of prejudice, conscious or unconscious, against which those who wish to think soundly must be on their guard. So strong is this underlying prejudice that the question is seldom discussed without some degree of feeling, although I do not mean to intimate that the majority report is subject to such a criticism. A belief or disbelief in public ownership and operation has in fact become a shibboleth by which the conservative test political and economic sanity.

Ownership and Operation Different

Returning to the practical question, it seems to me that it should be divided before it is answered. Public ownership is not the same thing as public operation, and each can exist apart from the other. All the railroads of this country are privately operated, with the exception of one in Alaska, the lines which are operated by the Canadian National Railway, a few city belt lines, and one or two little lines that I think are operated by the War Department. There are, however, a number of privately-operated lines which are publicly owned, some by states and one by the city of Cincinnati. Moreover a large share of the financial risk in the building of many other lines was assumed by public capital. All the subways in the metropolitan district of Boston are owned by either the city or the state, and most of the subways in New York are owned by the city.

The Boston subways are a good illustration of the advantages of public ownership. They were built by a public commission without a suggestion of scandal. The funds were procured at low rates of interest by issues of city or state bonds. They are leased to the operating company at an annual rental of 4.5 per cent, a rental sufficient to pay the interest on the bonds with something left over for a sinking fund which is already of substantial size The time will come in the not too distant future when they will be owned free from all debt. In the meantime there is no valuation problem, and no claim that the subways must earn anything more than 4.5 per cent on original cost, although they could not be built today for anything like that cost.

The substantial advantages of public ownership, as I see them, are low cost of capital; opportunity gradually to reduce or eliminate the capital charge without hardship upon the public in the process; and above everything else, I am inclined to think, freedom from the valuation nightmare. Under the valuation doctrine the capital charge in the case of privately-owned utilities can apparently never be reduced or eliminated by any sinking fund or other similar provision; it is a perpetual millstone around the public neck; and it may double in weight without any change in the underlying property if the reproduction cost theory is finally sustained. In addition the country must support a small army of valuation experts.

It may be argued that under public ownership the government will in some instances be too timid about investing in new enterprises and in other instances too venturesome. The answer is that experience has shown that private capital is subject to the same criticism. We have been forced to rely upon public regulation to protect ourselves against these very dangers. I refer to the powers so frequently vested in public commissions to grant or with hold certificates of exigency and to require new construction. If government can be trusted to police private capital in this respect, cannot it be trusted to police itself?

As a policy for future application to new enterprises the arguments in favor of public ownership seem to me not only persuasive but convincing. Whether it is wise to apply this policy to enterprises already existing is another matter, and I shall defer the discussion of that question to the final paragraph of this paper.

Operation More Debatable Than Ownership

Public operation of public utilities is a much more debatable question than public ownership. The usual method of approach in studying the question, however, seems to me quite inadequate and unsound. I refer to comparisions of the operations of publicly-managed and privately-managed properties. The conditions under which properties are operated vary so widely that it is practically impossible to make a scientific comparison of like with like. Laboratory experiments under which conditions can be rigidly controlled are, of course, wholly impracticable. If you have doubt as to the difficulty of comparisons, try making a statistical analysis of the relative efficiency of opertaion of two privately-managed utilities of the same kind, and see whether you can arrive at a result which will not be instantly and forcefully challenged on the ground of differing conditions. The field of selection in the case of publicly-operated utilities is very narrow, whereas in the case of privately-operated utilities it is very wide. Much depends, when such comparisons are undertaken, as with comparisions of railroad rates, upon the preconceived notions of the investigator. Marked success will, in general, be exhibited in proving what it is set out to prove.

It is quite certain that whether public utilities are privately or publicly operated, some will be better managed than others and some, indeed, will be very poorly managed. Read, for example, the report of the Interstate Commerce Commission upon its investigation of the history of the Denver & Rio Grande and ask yourselves whether public management could have done worse. I mention that report merely because it is recent. Many others might be cited. Even in the field of dishonesty and corruption it is easy to mention privately-operated railroads and utilities which have held unenviably high rank.

The best method of approach to the question, it seems to me, is to consider what advantages and dangers the two forms of operation respectively present, and the extent to which the advantages can be cultivated and the dangers be avoided. Which form of operation, in short, offers the greater opportunity for good results, all things considered?

The advantage which is chiefly urged as a reason for private operation is well expressed by the following sentence from the majority report: "Throughout the business world the best service is rendered when there is hope of reward, and the best commodity is produced when there is hope of profit."

Obviously money is the reward which the majority have in mind. Now I do not agree that money is the only or even the best incentive to good works. There is plenty of evidence to the contrary. But I shall try to meet the argument on its own ground. The owners—and by that I mean the stockholders—of a large private corporation are becoming, as the shares are more widely distributed, less and less of an influence in the management. The small stockholder cannot inform himself adequately as to the affairs of his corporation or attempt real control of its management. The present movement toward consumer and employee ownership of public utility shares may lessen the rigors of public regulation, but its tendency is clearly to make the board of directors a self-perpetuating body. It seems to me that the influence of the stockholders may largely be eliminated from consideration.

It must further be remembered that while money may be a reward of honest effort it has long been known as the "root of all evil." There are illegitimate as well as legitimate means of making money, and the illegitimate often promises a quicker and greater reward. In private business we depend upon competition to curb such tendencies, but in the public utility field the influence of competition is so limited and uneven that it cannot be depended upon as a regulatory force and it tends, indeed, to become a prolific source of discrimination and abuse. The railroad evils which the Interstate Commerce Commission was at the beginning created to correct were almost wholly the results of competition. The history of privately-operated railroads and public utilities makes it clear beyond question that the greed for gain, if permitted full sway in these monopolistic enterprises, will yield much evil as well as good. Their record in the past is littered with wreckage from financial fraud and both business and political corruption. The country found it necessary to devise some means of protection, other than competition, and where did it turn for such protection? That, it seems to me, is an extremely significant question.

Regulation Necessary for Private Operation

In its need it turned from private enterprise to our federal, state, and city governments. In other words,

it sought protection from men in public life, where the majority say that the rewards "are dubious and the profits are not forthcoming by honest means." That the move was a wise one is generally conceded. No one now advocates private operation without an accompanying public regulation. But are there no disadvantages in such regulation?

I have been a part of public regulation for a long time, and I am confident in the belief that it is an effective instrument for good. Nevertheless it is a somewhat cumbersome and anomalous device. Regulation is partial management. It is quite idle to attempt to disguise that fact by fine-spun distinctions. Also regulation must operate in large part through the slow processes of judicial procedure. An enormous amount of time and effort is consumed in the litigation incident to public regulation. The direct governmental expense is infinitesimal in comparision with the magnitude of the operations which are regulated; but when to that is added the expense incurred by the public in protecting its rights before the commisisons and the similar expense incurred by the utilities, the item of cost becomes substantial. In addition to the money cost is the wear and tear upon executives whose energies are often diverted from more constructive channels.

Moreover reliance in the last analysis is upon men without prospect of large money rewards who are picked by the same purely political processes that are so horrendous when public operation is suggested. It seems to me that the significance of this fact, combined with the fact that public regulation has achieved a very fair measure of success in lessening the evils which it was designed to correct, has escaped proper attention.

This brings me to the matter of political corruption and its relation to public operation. Certainly such corruption exists in this country, and to a distressing extent. The most alarming thing about it, I am inclined to believe, is the indifference and complacency with which it seems often to be viewed by many business men, even when it shows its slimy head in the highest places. But that is, perhaps, merely a reflection of the fact that a democracy gets about the kind of a government that it deserves, and of the further fact that business and political morality tend to rise or sink to a common level. For every public bribe-taker there is a private bribe-giver, and usually more than one. My own experience in the public service, however, has not made me pessimistic as to its possibilities. I have been impressed by the devotion, industry, and high integrity of public servants far more often than by evidence of their wickedness. But I shall not undertake to defend public operation on the ground that it is free from temptation or the possibility of abuse, or that the public service is within striking distance of perfection.

When evils in private operation have been disclosed by experience, the country has tried to find a cure for those evils, and with a fair degree of success. But when possible evils in public operation are suggested, they seem to be welcomed as friendly allies and pressed into service as reasons why such operation should on no account be attempted. If there are antidotes to the evils, few seek to discover them. The problem is one to which I have given some thought, and I have certain suggestions to offer which I believe are worthy of some measure of consideration.

Business Management Desirable

In the first place, it seems clear to me that public operation of an industry or business ought not to be handled in ordinary routine by a government bureau or department, nor should it be merged with the ordinary civil service. On the contrary, it should be kept separate and handled on a strict self-supporting basis by a business corporation organized in the usual way but controlled through stock ownership by the government. Its affairs should be directed, like those of any other business corporation, by a board of directors chosen by the government, as the controlling stockholder. A majority of the directors should be both appointed and selected by the president or the governor or the mayor, as the case may be, or perhaps by an unpaid commission constituted for the purpose; but provision should be made for minority directors selected by non-political groups having a direct personal interest in honest and efficient management. I think that the employees should be represented in this way by one or more directors and also the business interests of the community. How these latter representatives should be selected it is unnecessary for present purposes to determine, but the prevalence of chambers of commerce, national, state and city, suggests at least one way.

Such a plan, of course, is capable of much variation and could be improved and perfected by the thought of many minds, and by experience if it were carried into practice. As a matter of fact it is quite similar to the plans under which the Canadian National railway and the Boston Elevated railroad are now publicly operated, except that in neither of those cases, I believe, is provision made for the appointment of minority directors or trustees independent of those selected by the government. Such a plan makes it possible to carry on the business in much the same manner as it would be carried on by a private business corporation and with much the same degree of flexibility in the fixing of wages and salaries. No difficulty would, I am confident, be experienced in paying adequate salaries, although they would not reach the extreme and unnecessary heights sometimes attained in the case of private corporations. Any tendencies toward corruption or other manner of exploitation would be curbed, if not by the character of the publicly-selected directors, as I believe would in general be the case, then by the presence on the board of independent directors representing the non-political groups.

I have, of course, attempted in this very brief report only to give the barest skeleton of this plan of public ownership and operation. As I have suggested, elaborations and improvements and further safeguards are altogether feasible. The plan would, as I see it, among other things

(1) Render unnecessary much of the present system of duplicated management operating through the cumbersome processes of judicial procedure—which is what public regulation really is.

(2) Free the public from the vexation and expense, and also the very serious dangers, of the valuation doctrine.

(3) Reduce the cost of procuring capital and render unnecessary any profit over such cost, but at the same time make it feasible, if desired, to retire debt and the annual burden associated with such debt by sinking fund or similar provisions.

(4) Substitute for private managements which more and more are becoming self-perpetuating institutions, managements directly responsible to a government representing all the people, and in part to non-political groups directly benefited by good management and injured by bad.

(5) Lessen the present danger that managements will be directly or indirectly dominated by banking or other interests which have business dealings with the utilities.

(6) Improve the relations between the utilities and their employees and also the public which they serve by changing the key note of the management from private profit to public good.

But there is something, in my opinion, which is even more important, although less tangible, than any of these matters which I have mentioned. I can not avoid a fear that we are in danger in this country of being mired in a morass of gross materialism, in other words of becoming a nation devoted to the worship of money. For my part I do not believe that the pursuit of profit is the chief end of man, that government is a necessary evil to be kept religiously out of all fields which may offer opportunities for private profit, or that the public service must inevitably be the domain of a certain low order of beings commonly styled politicians.

On the contrary, I believe that there is no more important field of activity than the public service, that it offers opportunities for genuinely constructive work of consuming interest, and that it ought to be able to attract as good brains as the country can provide.

"Functions of State" and Private Profit

There are certain function which clearly belong to the state and these it ought in self respect to perform itself. They ought not, in my opinion, to be degraded by conversion to the ends of private profit. We depreciate ourselves and our public service by so doing, confess our incapacity for efficient government, and surrender high ideals for low. If we should adopt the principle that every governmental function shall be performed directly by the state and shall not be farmed out to private enterprise, it is my very sincere belief that the ultimate result would be to increase respect for the government and improve the character of our public service.

I know of no better way of making government efficient than by making it vital to the country, including its business men, that it should be efficient. But even if the effort were attended by many failures and shortcomings I believe it to be a far healthier situation that this country should struggle toward an ideal than that it should surrender to the baser principle that the public good can only be attained to the extent that it happens to coincide with the ends of private profit.

As a policy for new enterprises of the future, then, I am wholly convinced that public ownership and operation along the lines which I have indicated is sound public policy. There remains the question, however, whether an attempt should be made to establish such a policy in the case of those railroads and public utilities which now exist and are privately operated under public regulation. It seems to me that there are many practical aspects to this question which merit consideration.

In the first place, any radical, extensive, and sudden change in present conditions is dangerous unless proper preparations have been made for such a change and it is supported by public opinion. I question whether public opinion is now prepared to support a wholesale conversion of our railroads and utilities to public ownership and operation, and I am quite certain that adequate preparations for such a step have not been made and probably could not be made under present conditions.

In the second place, until the courts have more definitely indicated their views upon the valuation question, such a step would be attended by the danger that it would involve the payment of a price, either for the physical properties or for the stocks of the private corporations, so out of reason that it would condemn the new policy to comparative failure for some years to some.

Without further elaborating such considerations I am persuaded that the policy of public ownership and operation must await gradual development under the slow processes of evolution. It can and should be adopted for the future, and from time to time circumstances will arise in the case of particular existing properties which will make possible the adoption of the new policy under comparatively favorable conditions.

In the meantime we, as public officials entrusted with the duty of regulating private operation, ought to do everything in our power to make the present system work as successfully as possible to the public advantage, at the same time preparing ourselves by unremitting study of the situation for any eventualities that the future may hold forth.

Fireman's Wage Position Enviable, Railroads Testify

THE direct examination of W. M. Jeffers, general manager of the Union Pacific, before the board of arbitration hearing the demand of western firemen for a wage increase at Chicago, was completed on October 27 with the introduction of figures of average earnings on selected divisions of four railroads. Figures of earnings of individual firemen were presented for 1926 and 1927 for the Illinois division of the Chicago, Rock Island & Pacific, extending from Rock Island, Ill., to Blue Island and to Peoria, for the St. Paul division of the Northern Pacific extending from St. Paul, Minn., to Staples, for the Western division of the Union Pacific extending from Ogden, Utah, to Rawlins, Wyo., and for the Illinois division of the Atchison, Topeka & Santa Fe extending from Chicago to Shopton, Iowa.

These figures of earnings show, said Mr. Jeffers, that regular firemen or those who work reasonably regularly earn from $2,200 to $3,000 per year, refuting the assumption made by employee witnesses that the average yearly compensation is $1,800. A fireman earning less than $150 per month, in the opinion of Mr. Jeffers, is an extra man, an emergency man or a man who has "laid off" for a number of days, and any man who works regularly will earn in excess of $150 per month in road service. For the four divisions considered the average earnings of firemen during 1926 were $2,163.80. Using the first nine months of 1927 as a basis, compensation for the year 1927 was estimated to be as follows for each division: Rock Island, $2,080.08; Northern Pacific, $2,013.60; Union Pacific, $2,329.68; Santa Fe, $2,243.64. When only the employees earning more than $150 per month are included estimated average earnings for 1927, based upon actual earnings for the first nine months are as follows: Rock Island, $2,401.68; Northern Pacific, $2,350.68; Union Pacific, $2,728.20; Santa Fe, $2,575.56. Mr. Jeffers stated, in reply to an earlier question by a member of the arbitration board, that about 25 per cent of the compensation paid to firemen is given to those in yard service and about 75 per cent to those in road service, a ratio which was said to apply to all the roads parties to the wage hearing. On the Santa Fe 11.33 per cent of the total number of firemen employed earned less than $100 per month in 1926, he said. Their average wage was $53.53 per month.

In referring further to differential rates Mr. Jeffers said that in the West differential rates ranging from 1 cent to $1.61 per day are paid to firemen operating on 20.4 per cent of the passenger motive power and on 58.6 per cent of the freight motive power. The preponderating power in passenger service was shown to have a weight on drivers between 140,000 lb. and 170,-

000 lb. and of this class of locomotives 18.5 per cent carry a differential rate. In freight service the preponderating power has a weight on drivers between 200,000 lb. and 250,000 lb. and differential rates are paid on 95.8 per cent of these locomotives. Excluding switching and terminal companies all but four roads in the West have differential rates in effect, he said.

Mr. Jeffers spent some time in elaborating upon the earnings of firemen who testified for the Brotherhood at the start of the hearing to show that in many cases firemen are being paid at a higher rate than engineers. He showed that, according to company figures, A. P. Jacoby was paid in 1926 at the rate of $1.09 per hour and in 1927 at the rate of $1.29 per hour and that J. M. Hall, another witness, earned at the rate of $1.36 per hour as a fireman in 1926, while as an engineer he was paid at the rate of only $1.04 per hour.

A fireman is receiving approximately $500 more per year in wages than a boilermaker, a machinist, a signalman, or a skilled mechanic who must serve a four-year apprenticeship before receiving a journeyman's wage, Mr. Jeffers asserted. Road passenger and road freight firemen are paid from $350 to $375 more per year than mechanical craftsmen while the same men are paid from $300 to $800 more per year than stationary firemen. In 1926, he said, only 11.14 per cent of the 1,788,932 railroad employees and subordinate officers earned an average wage greater than road passenger firemen. Excluding enginemen, road conductors and yard foremen only 4.08 per cent obtained a wage exceeding that of a fireman and most of those men were subordinate officers and technical experts.

"Under the restrictions with which we are now working there are more men in the business than are necessary," said Mr. Jeffers under cross examination and questioning by labor members of the arbitration board. "There are certainly more firemen than there are trainmen to handle the same amount of business, and I do not know of any reason why we should have more firemen on a district than we have brakemen. I do not recall ever having heard a conductor or trainman complain about too much mileage. I have heard them complain about not making enough. There is no limitation on the maximum mileage for conductors and brakemen in freight service except on a few roads. Trainmen in freight service in Wyoming on the U. P. are now making approximately 6,000 miles per month."

George H. Warfel, assistant to the general manager of the Union Pacific in charge of accident prevention work, presented a series of statements and charts showing the declining hazard of the work of railroad trainmen as a class and of firemen in particular. The casualties from collisions have been reduced from 10,317 in 1907 to 1,879 in 1925—82 per cent, he testified, explaining that the term casualty includes both fatal and non-fatal accidents. The fatality rate for train men of Class I railroads has been reduced from 4.23 per 100,000 men on duty in 1917 to 2.08 in 1926—a decrease of over 50 per cent, according to his exhibits while injury rate has been reduced from 137.68 to 89.99—a decrease of over 34 per cent. Since 1917 the fatalities among firemen and helpers have been reduced about 63 per cent, another exhibit showed.

John Purcell, assistant to the vice-president, in charge of mechanical matters, of the Atchison, Topeka & Santa Fe, declared in his testimony on October 31 that the locomotive superheater has accomplished more than any other single device except the mechanical stoker, in reducing the amount of work performed by the fireman on coal-burning engines. It reduces the fuel consumption about 20 per cent, he said, adding that on the western railroads superheaters have been applied to 58 per cent of the locomotives at an average cost of $4,190. Mr. Purcell also described the manner in which the mechanical stoker, the coal pusher, the air operated bell ringer, the air operated fire door, the practice of welding tubes to the back flue sheet, table grates, the drop bottom ash pan, the squirt hose, and oil burners have reduced the physical labor required of the fireman. The feed water heater has lightened the fireman's work by 10 per cent, he said. George H. Wood, supervisor, air brakes, the Santa Fe, who served as a fireman on that railroad from 1895 to 1901, testified that the fireman on stoker fired and oil burning locomotives on the Santa Fe today "does nothing" compared to his duties some years ago. So far as labor is concerned the firemen are really not laboring on the major portion of the business the company handles. From 1915 to 1926 average wages of western locomotive firemen increased 92 per cent, while wages of conductors and trainmen increased 83 per cent, and wages of locomotive engineers increased less than 60 per cent, declared J. L. Jacobs, economist of Chicago, on November 1. In this same period, according to the witness, the purchasing power of western locomotive firemen increased 16 per cent, as compared with an 11 per cent increase for conductors and brakemen, and a 3 per cent decrease for engineers. Not only do the present wages of firemen mean an increase of 16 per cent in purchasing power over 1915, but they also mean a 15 per cent increase over their 1920 purchasing power, an 11 per cent increase over 1921, and a 5 per cent increase over 1924, he said.

From 1920 to 1927, Mr. Jacobs testified, wholesale prices have declined 37 per cent; retail food prices have decreased 22 per cent, and the cost of living has shown a drop of 17 per cent. In this same period the average weekly earnings of more than three million industrial employees have been cut 14 per cent. As contrasted with these decreases, the average earnings of western road firemen have been cut but 4 per cent, while the wages of yard firemen have been reduced but 3 per cent. He showed that food prices in the East are 9 per cent higher than in the West, while southern food prices are 4 per cent higher than those in the West and that manufacturing wages east of the Mississippi river average 6 per cent higher than those in the West. The firemen employed in the East received earnings in 1926, 3 per cent below the average firemen's earnings in western territory, while in the South the average earnings of the firemen were 5 per cent lower than in the West.

Mr. Jacobs said that lower living costs obtain for western firemen since more than 70 per cent of these men live in cities of less than 100,000 population, while more than 55 per cent live in cities or towns with a population below 30,000 and living costs in the smaller communities are lower than in larger centers of population. Mr. Jacobs submitted an exhibit showing that the average earnings of western firemen in 1926 amounted to $2,191 while the average wages of all railway employees in that year amounted to $1,656, and average manufacturing wages were $1,386. For the same year he also presented the following average annual wage figures: Farm labor without board, $586; income per farm family for crop year 1926-1927, $853; industrial workers, New York, $1,509; Illinois, $1,491; California, $1,477; Maryland, $1,315; Oklahoma, $1,428; Wisconsin, $1,335; all railroad employees, excluding executives, $1,621; professional, clerical and general, $1,646; maintenance of way and structures, $1,564; train, engine and yard service, $2,038; manual workers in Wisconsin, $1,355; non-manual workers in Wisconsin, $1,501; municipal employees in 12 cities in 1925, $1,912; building trades employees in 115 cities, $1,751.

The Control of Emergency Material Stocks*

High carrying costs urge reductions—Flat cars and consolidation are ways out

By U. K. Hall
General Supervisor Stores,
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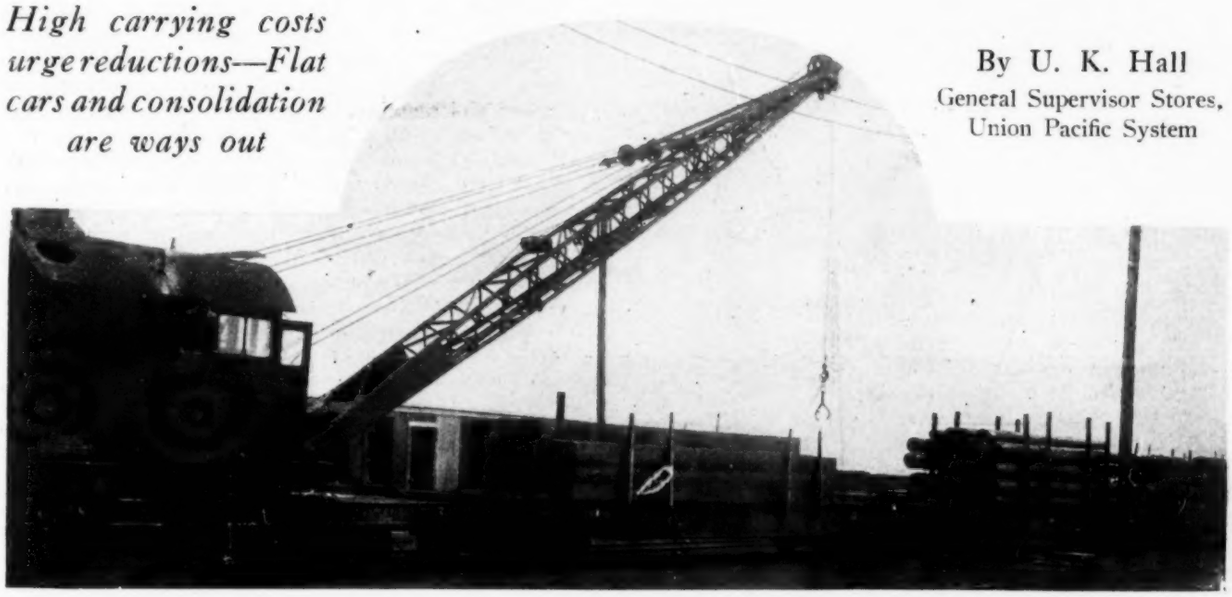


Emergencies Can Usually Be Met Better from the Central Yard than from Local Storage Points

THE stores department is organized, officered and maintained as an adjunct to the using departments. It is a department of service, and only as it performs this service in having materials on hand in sufficient quantities and at the points needed, with a minimum investment, is a railroad justified, as an organization, in continuing its existence.

A difference must be recognized between the store department and users. The latter are interested in having the necessary materials when and where needed, but the store department not only has this responsibility but is further charged with a definite responsibility for the amount of money tied up in material. In years gone by this phase of the subject was not given much consideration. But today, as never before, managements are keeping a weather-eye on the investment feature. All must realize, however, that there is a viewpoint bigger and even more important than any departmental viewpoint. It is the viewpoint of the railroads that employ them and still farther back of that, the viewpoint of the public which the railroads serve.

Consider the Carrying Cost

During the past few years, Division VI, Purchases and Stores, American Railway Association, has been studying the cost of carrying material and the consensus of opinion, not only in the organization but from the investigations of the Department of Commerce of the United States Government, is that the cost ranges anywhere from 15 to 20 per cent of the investment in the material and supplies carried in stock. It is costing from 15 to 20 per cent to hold every dollar tied up in material stocks. This carrying charge covers interest on the investment, handling charges, obsolescence, deterioration, accounting, taxes, insurance, stores facilities, wastage, depreciation, etc.

This cost of investment is of particular importance in considering those stocks which are placed at strategic points along the railroad. Such emergency stocks, until they are put in actual service, are valueless except as insurance. Since they represented a frozen instead of a liquid investment, the cost of carrying them should enter into all considerations by maintenance forces.

Emergency stocks for railway structures consist of piling, stringers, caps, guard rails, bridge ties and hardware. Under no circumstances should such stocks be placed without careful investigation of the quantities needed. Strict attention should be given to the number of structures that might be affected by any sudden emergency. Any placing of the material where careful study has not been given to the needs is haphazard.

It should further be realized that these emergency stocks are subject to waste and deterioration if not properly stored and piled. Orderly piling and good housekeeping promotes efficiency and conserve stocks. Proper skids and platforms should be provided for lumber which should also be properly stripped and piled. This not only allows proper circulation but permits a ready count of what is actually on hand at all times. It is the responsibility of the stores department to see that this stock is maintained in the quantity agreed upon but this requires that users promptly report any withdrawal from stock so that immediate replacement can be made.

Since forest products are subject to considerable deterioration, a definite time limit of storage also should be agreed upon by the two departments. Generally, such emergency stocks should not be held on hand at any point over a year. A sign should be placed on each pile or stencils on each timber to show the date on which it was placed in storage and the date for renewal. For

*From an address before the American Railway Bridge and Building Association in Minneapolis, Minn., on October 18.

example, if material is placed in storage on October 1, 1927, the sign would show:

Material placed October 1, 1927
To be renewed September 30, 1928

Supervisors from any department interested can then see at a glance whether the terms of the agreement have been followed, the old materials can be taken out and put into general use before deterioration sets in and the maintenance department is assured of suitable material for use when the emergency comes.

Can Reduce Emergency Stocks

We have followed the line of least resistance and have placed stocks of material for emergencies at points where they are really not absolutely justified by the demands of the service. When an emergency arises it is of little value to have materials available where forces and equipment for rebuilding are not at hand. A primary thing to consider in placing such stocks is the time it will take to obtain forces and equipment to use the materials provided. If it is necessary to send to a distant point for a pile driver and forces, nothing is gained by the indiscriminate piling up of materials when they could be brought with the equipment and forces when coming to the scene of trouble.

A Sample of Protection Carried to Excess—Water Supply Materials Under a Maintenance Department Supply Shed

Recently one of the railroads had a washout which was far in excess of anything that could possibly have been anticipated. Although at the time it could not be ascertained to what extent materials would be needed, the stores department shipped 75 carloads of bridge materials including piling and all necessary timbers, hardware, etc., which arrived in sufficient time to meet all needs. Here was an instance where the situation was handled to the satisfaction of all without having emergency stocks in the field.

Store on Flat Cars

In another case, after study by the maintenance department in conjunction with the stores department, all the emergency stocks in a certain territory were abolished and in their place out-of-service or non-revenue flat cars are kept loaded with the required quantity of piling, bridge timbers, hardware, etc., all subject to designated renewals to prevent deterioration. These flat cars, like the fire department, are ready for a call at any time. The investment in material has been reduced several times by their use and every requirement of the service has still been met.

There are plenty of instances where the so-called emergency stock privilege is abused. An example is found in a recent case at a terminal point where a large material yard was located, sufficient to supply all the operating and maintenance needs of an entire division, and at the same time at a point less than a mile from the main stock a so-called emergency stock was also maintained. In this instance, it was proven that the latter stock was not required but had simply been placed there to avoid the necessity of calling upon the main supply when the occasion demanded. There was no justification of such a condition because the main material yard was prepared to meet any possible requirement day or night, even far over and above the quantities that could be kept in an emergency stock and thus save the company the 15 to 20 per cent carrying charge on the emergency stock so held.

Store departments are not advocating any lessening of protection to traffic, but are endeavoring to co-operate with the using departments to meet all the necessities of the service and at the same time to reduce the investment in materials, including the 15 or 20 per cent carrying charge upon it. They do urge a further study of such stocks to determine whether or not they are actually necessary and whether from a consideration of all viewpoints, their consolidation or reduction cannot be made without interfering with the protection required.

The stocks in bridge and building outfits, which are being constantly carried up and down the line are both for emergency and maintenance purposes; nevertheless investigation will often reveal that more material are carried with these cars than is essential to the service. Such excesses of material are detrimental to the users as well as to the company, detrimental to the users because of the fact that the more material carried the more cars it takes to haul the dead tonnage, and the harder it is to get at materials actually needed. Where such stocks are kept up in a scientific manner, less stock is usually carried. One foreman, with co-operation and assistance of the store department has instituted the use of stock books, listing the items carried in these outfits. Once a month a record is made of that material on hand and the replacement is made on the basis of actual uses rather than by guess-work. The foreman first claimed this work would require additional clerical force, but after a year now claims he could not operate efficiently without it. With the stock book, the foreman has the satis faction of knowing at all times just what he has on hand and in what quantities the material is moving and why and for what purpose all the material is carried.

While at first glance, such a system might seem elaborate, in the long run it is fully justified by the results obtained, including its bearing on the 15 to 20 per cent carrying cost.

Water service materials are difficult to control. Nothing must be done that would in any way jeopardize the necessities of this department in actual operations, but, following the line of least resistance, many pumping plants and junction points have been in the habit of keeping excessive line quantities of protection material on hand. The value of materials and supplies kept at such points will easily average at least $1,000 per point. These supplies should not consist of every-day types of fittings incidental to general upkeep. The over-supplying of such common stocks is a misuse of the privilege and reflects mismanagement in not ordering from the usual source of supply the general items necessary for maintenance and upkeep.

The average cost of material tied up at each coal chute will easily aggregate $2,000 to $3,000. Here, as with other emergency stocks, a definite bill of material should be determined by the using and stores departments, and blue prints and copies of the list in both departments for instant reference. There may be certain parts, such as those subject to sudden strain or absolutely essential to the operation of the plant, which should be kept on hand at the local point. With other systems, however, which could be centered, the entire supply for a division can be consolidated, thus greatly lessening the amount necessary for protective purposes.

In considering so-called emergency stocks for water service and coal-handling points, consideration should be given to the train service available at such points. It has been found by actual experience that much material, once scattered and considered as essential for emergencies, has been consolidated in general or division stores by the use of the definite bill of materials mentioned, and taking into consideration the train service. If the service is such that shipments can be made at almost any time, day or night, the tension is lessened, thus making it possible to reduce greatly the local materials carried. Furthermore, if the stores department at a given point of general supply has secured, through co-operation of the using department, blue prints showing the requirements of the various pumping plants, coal chutes, etc., and listing the character of the engine, pump, gears and general requirements, it is usually in a position to make substitutions sufficient for immediate needs if not to make immediate replacements in kind.

Telephone Annunciators on M-K-T Aid Train Dispatcher

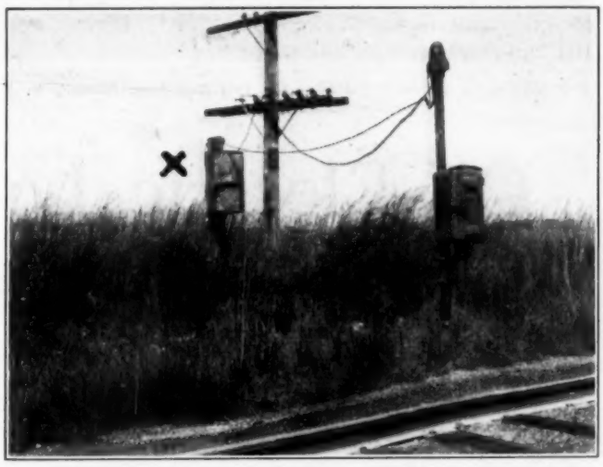
By R. A. Hendrie

Telephone Engineer, Missouri-Kansas-Texas, Denison, Tex.

THE Missouri-Kansas-Texas is using 3 automatic and 15 semi-automatic train annunciators of the loud speaking telephone type to report the passing of trains at points where no operators are stationed. Some dispatchers' districts are 400 miles or more in length and where open telegraph offices are few and far between, especially at night, the annunciators aid the dispatcher materially in keeping a check on the location of trains on the road. This information enables the dispatcher to determine more closely the arrival of a train at the next open telegraph office and permits him to have his train orders ready for the train and in many instances to advance trains to better meeting points, thus facilitating train operation and effecting savings.

The automatic train annunciator comprises a microphone transmitter connected to the dispatcher's loud speaking telephone circuit through the operation of a track relay when the track circuit is occupied. By means of whistle signals the direction of a train may be determined if the engineman signals while in the vicinity of the microphone. The microphone is housed in a wood box to protect it against the elements and is set back about 15 ft. from the ballast line. The automatic annunciator is generally used outside yard limits of large terminals where freight trains may be delayed in getting started, in order to notify the train dispatcher when the train is actually out of the yard and on its way.

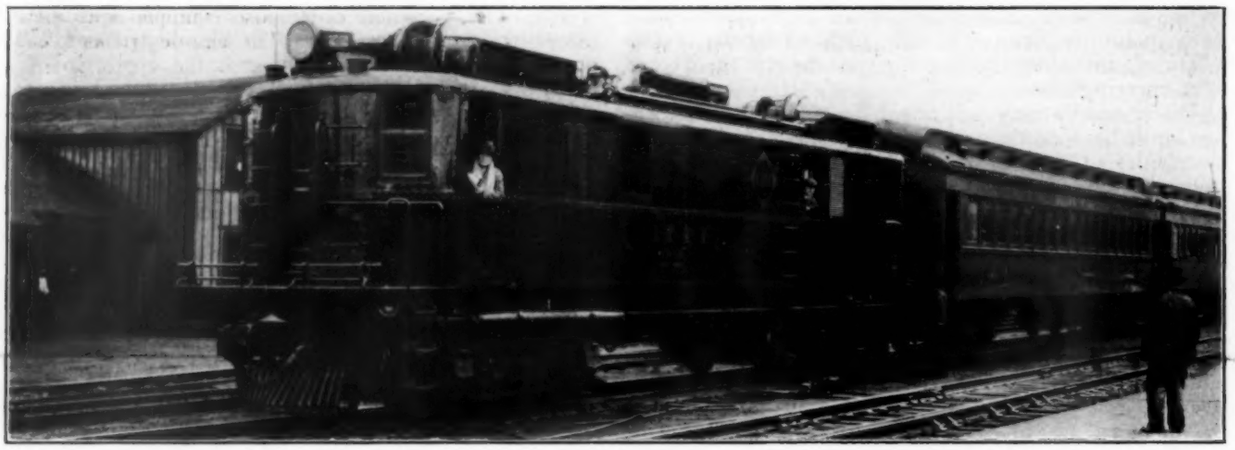
The semi-automatic annunciators are controlled by the train dispatcher through his regular telephone selective calling system. These installations comprise an ordinary telephone selector controlled by a cut-in and cut-out key in the dispatcher's telephone key case, a locking relay, microphone, induction coil, condenser and battery. These microphones, when placed on tops of hills where freight trains are liable to "double," enable the dispatcher to determine the progress of a train over the hill by cutting in his microphone at the location a reasonable length of time ahead of the expected passing time. The dispatcher then continues with his duties and when the train approaches the location his attention is automatically directed to the noise of the passing train. The train speed can be roughly determined by the exhaust of the engine or the click of the wheels over the rail joints. If the train sounds as if it is running too fast for full tonnage the dispatcher can count the number of cars in the train by the click of the rails and thus determine whether or not a portion of the train has been left down the hill.



Roadside Microphone in Wood Box for Protection

These semi-automatic installations are also used at small way stations which are closed during the night and where trains may do considerable switching while the office is closed. In these installations a dispatcher can hear the train arrive and can listen to it while switching at the station, catching the engineman's "out-of-town" whistle signal when finished.

In general, whistle signals are audible for a quarter of a mile in either direction while at some locations out in the country between stations whistle signals have been heard a distance of a mile. Every operation within the immediate vicinity of the annunciator location is reproduced on the telephone loud speaker in the dispatcher's office. When the latter has satisfied himself as to what is going on, he cuts out, disconnecting the apparatus from the line.



Erie Oil-Electric Locomotive During the Test Run from Hornell, N. Y., to Meadville, Pa.

Oil-Electric Locomotive Tested in Passenger Service

Erie locomotive with four coaches maintains average speed of 33.4 *m.p.h. from Hornell to Meadville*

ONE of two 100-ton oil-electric locomotives recently purchased by the Erie completed a test run with four coaches from Hornell, N. Y., to Meadville, Pa., on October 13, 1927, the object being to ascertain its suitability for passenger service. Both of these locomotives were built jointly by the Ingersoll-Rand Company, the American Locomotive Company and the General Electric Company. One of these units, the first of the order delivered, has been in switching service for some time in the yards at Akron, Ohio. The second locomotive is similar in design and construction to the one in switching service, except that when delivered it was geared for high speed.

The length of the test run was 183.7 miles, the elapsed time for the trip being 5 hr. 30 min., as compared to 4 hr. 51.5 min. actual running time. Six stops of three minutes duration each were made and in addition the train was required to slow down a number of times due to track repair work and to construction work on bridges. The fuel consumed during the run represented a train cost of 3.65 cents per mile. The total weight of the train was 280.5 tons, of which 115 tons was the weight of the locomotive and 165.5 tons, the weight of the four coaches.

The oil-electric locomotive used on this run is of practically the same design and construction as the locomotive placed in service by the Long Island in December, 1925.* It develops a tractive force of 40,000 lb. with the high speed gears and is powered with two Ingersoll-Rand oil engines of the vertical, six-cylinder, four-cycle, single acting, variable speed type having direct fuel oil injection. Each engine is rated at 300 hp. making a total of 600 hp. for the two oil engines. The electrical equipment consists of two General Electric 200-kw., 600-volt, direct current generators each direct connected to one of the oil engines. Four railway type GE-69-C motors are mounted, one on each of the axles.

No special assignment of enginemen was made for this run, the first man out on the engine crew board being assigned to the run on each of the two divisions covered. The instructions given to the two enginemen at the division terminals were purposely made brief with the object of ascertaining what additional instruction was necessary to teach a steam locomotive trained engineman to handle an oil-electric locomotive. Both enginemen handled the locomotive and train satisfactorily and were able to maintain the prescribed schedule.

The stopping, starting and speed of the locomotive is controlled from either end of the cab. There are two

Main Line Test of Erie 100-Ton Oil Electric Locomotive No. 22

Start of test—Hornell, N. Y., Erie station	7:00 a.m., Oct. 13, 1927
Conclusion of test—Meadville, Pa., Erie station	12:30 p.m., Oct. 13, 1927
Trailing load	4 coaches, 165.5 tons
Total train weight, including locomotive	280.5 tons
Miles traveled	183.7
Total time elapsed	5 hr. 30 min.
Actual running time	4 hr. 51.5 min.
Total detention	38.5 min.
Average speed	33.4 m.p.h.
Maximum speed	56 m.p.h.
Total kw.-hr. generated	1.098
Average oil engine load factor, per cent	49.9
Maximum oil engine load factor, per cent	78.8
Total fuel oil consumed, gallons	134
Total lub. oil consumed, gallons (estimated)	2
Total water consumed, gallons	Negligible
Total ton-miles	38,301
Total fuel cost—Fuel oil at 5 cents per gal., and lubricating oil at 50 cents per gal.	$7.70
Fuel cost per 1,000 ton-miles, cents	20.10
Fuel cost per train mile, cents	4.19
Fuel cost per kw.-hr. generated, cents	.701
Fuel cost per car mile, cents	1.05
Fuel oil per kw.-hr. generated, pounds	.891
Fuel oil per train mile, pounds	5.32
Fuel oil per 1,000 ton-mile, pounds	25.50
Train miles per gallon fuel	1.37
Kw.-hrs. generated per gallon fuel oil	8.18
Kw.-hrs. generated per 1,000 ton-miles	28.70

*A description of the Long Island oil-electric locomotive is published in the December 26, 1925, issue of the *Railway Age*, page 1190.

control handles, one of which is a throttle lever for controlling the output of the oil engines and the other is a master controller, or electric switch handle, which connects the traction motors in series or in parallel for either forward or backward movement. In operation, the electric control handle is set for either forward or backward motion, with the motors in series for speeds below five miles per hour. The position of the throttle lever determines the power delivered by the engines.

A log of the passenger run test is given in the table. The average load factor during the trip was 49.9 per cent, the maximum load factor being 78.8 per cent. A total of 8.18 kw. hr. and 1.37 train-miles was made per gallon of fuel oil consumed. The total cost of fuel oil for the trip at 5 cents per gal., was $6.70 and the cost of lubricating oil used, at 50 cents per gal., was $1.00, making a total of $7.70 for the trip. This figure divided by the number of miles traveled gives 4.19 cents, the cost of oil per train mile or, with the train of four coaches, 1.05 cents per car mile.

4-8-2 Type Locomotives for the Missouri Pacific

THE Missouri Pacific recently placed in passenger service five 4-8-2 type locomotives, built by the American Locomotive Company, that develop a maximum tractive force of 63,665 lb . These locomotives were purchased to replace a number of locomotives of the same type, built in 1921 by the same company, on certain trains that required locomotives of larger capacity to maintain the required speed over divisions having a ruling grade of 1.9 per cent. The earlier locomotives developed a maximum tractive force of 53,500 lb. A comparison of the principal weights and proportions of these locomotives is shown in the table.

The new locomotives have 73-in. diameter drivers, 33-in. diameter engine truck wheels and 43-in. trailing truck wheels. The cylinders are 27 in. in diameter by 30-in. stroke and the boiler operates at a pressure of 250 lb. Walschaert valve gears are used, with a maximum travel of 9 in., an outside lap of 1 5/16 in., an exhaust clearance of 1/16 in. and a lead in full gear of 5/16 in. The piston valves are 14 in. in diameter. The total weight of these locomotives is 394,000 lb. of which 264,500 lb. is carried on the drivers. The factor of adhesion is 4.15.

The boilers are equipped with type A superheaters, Worthington No. 4 feedwater heaters and Nicholson thermic syphons. Other equipment includes the Alco type E power reverse gear, cut-off control and backpressure gage, Standard stoker, and steam grate shaker. The Alco lateral motion device is used on the front drivers. The locomotives are also equipped with speed recorders and rail washers. The engine trucks are of the Commonwealth constant resistance type, and the frame cradle, tender trucks, tender frame and trailing truck are also of Commonwealth design. The design of the latter is arranged for future application of a booster. Both the engine and tender are designed to permit future application of the National Safety Appliance Company's train control device.

Table Comparing the Principal Dimensions, Weights and Proportions of the Two Classes of Missouri Pacific 4-8-2 Type Locomotives

	1927	1921
Year built	1927	1921
Service	Passenger	Passenger
Cylinders, diameter and stroke	27 in. by 30 in.	27 in. by 30 in.
Valve gear, type	Walschaert	Walschaert
Weights in working order:		
On drivers	264,500 lb.	226,000 lb.
On front truck	64,500 lb.	52,500 lb.
On trailing truck	65,000 lb.	56,500 lb.
Total engine	394,000 lb.	335,000 lb.
Tender	274,100 lb.	192,800 lb.
Wheel bases:		
Driving	19 ft. 7 in.	19 ft. 7 in.
Total engine	42 ft. 2 in.	41 ft. 4 in.
Total engine and tender	88 ft. 4½ in.	77 ft. 2 in.
Wheels, diameter outside tires:		
Driving	73 in.	73 in.
Boiler:		
Steam pressure	250 lb.	210 lb.
Diameter, first ring, inside	84 in.	76⅝ in.
Firebox, length and width	126⅛ in. by 96¼ in.	114⅛ in. by 84¼ in.
Tubes, number and diameter	239—2¼ in.	182—2¼ in.
Flues, number and diameter	50—5½ in.	40—5½ in.
Length over tube sheets	22 ft.	22 ft.
Grate area	84.3 sq. ft.	67 sq. ft.
Heating surfaces:		
Firebox and comb. chamber	329 sq. ft.	300 sq. ft.
Arch tubes	15 sq. ft.	27 sq. ft.
Syphons	107 sq. ft.	None
Tubes and flues	4,661 sq. ft.	3,607 sq. ft.
Total evaporative	5,112 sq. ft.	3,934 sq. ft.
Superheating	1,352 sq. ft.	1,084 sq. ft.
Comb. evap. and superheating	6,464 sq. ft.	5,018 sq. ft.
Tender:		
Water capacity	14,000 gal.	10,000 gal.
Fuel capacity	18 tons	16 tons
Maximum rated tractive force	63,665 lb.	53,500 lb.
Weight proportions:		
Weight on drivers ÷ total engine weight, per cent	66.25	67.5
Weight on drivers ÷ tractive force	4.15	4.22
Boiler proportions:		
Tractive force ÷ comb. heat. surface	9.85	10.7
Tractive force × dia. drivers ÷ comb. heat. surface	719	779
Firebox heat. surface ÷ grate area	3.9	4.48
Superheat. surface, per cent of evap. heat. surface	27	26.7
Firebox heat. surface, per cent of evap. heat. surface	6.44	7.64

One of the 4-8-2 type locomotives built by the American Locomotive Company for the Missouri Pacific

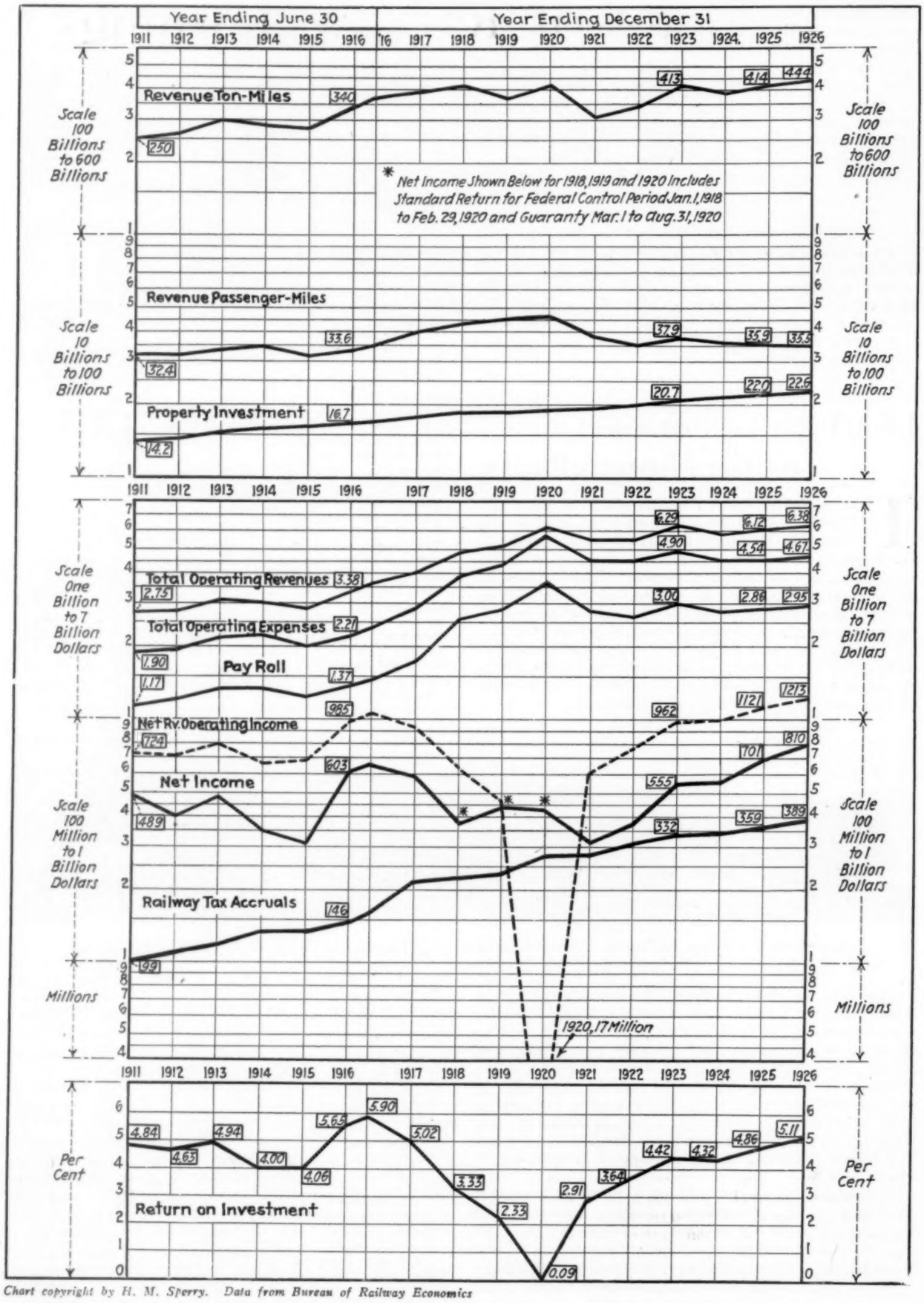


Chart copyright by H. M. Sperry. Data from Bureau of Railway Economics

Fig. 1—Leading Factors in Railway Earnings Plotted on a Ratio Scale, for Clearer Comprehension of Relationship

The Trend of Railway Earnings Shown in Charts

Regions showing greatest increase 1926 *over* 1923 *in gross ton-miles per train hour show also greatest increase in net operating income*

By Henry M. Sperry, M. Am. Soc. C. E.

THIS article is written for the purpose of bringing up to date a similar article by the present writer which appeared in the *Railway Age* of July 25, 1925, under the title "The Trend of Railway Earnings Shown in Charts."

1926 Compared with 1923 and 1916

In 1926, the railroads moved 7.6 per cent more revenue ton-miles than in 1923. Although this increase in freight traffic was in part balanced by a loss of 6.5 per cent in their revenue passenger-miles they were still able to show an increase of 1.5 per cent in their total operating revenues. The total railway operating expenses decreased 4.6 per cent. The net railway operating income showed an improvement over 1923 of 26.1 per cent and the railways' net income after interest and other charges increased no less than 46.0 per cent.

Comparing 1926 with the year ended June 30, 1916, the revenue ton-miles increased 30.6 per cent and the revenue passenger-miles 5.5 per cent, the net railway operating income 23.2 per cent and the net income after charges 34.3 per cent. The rate of return on the investment was 5.65 per cent in 1916, 4.42 per cent in 1923 and 5.11 per cent in 1926.

Complete Picture on Single Page

The relationships as between these particular years are shown in Table I. The student of railway affairs is interested also in the results of intervening years, particularly because he desires to observe whether the trends are regular and consistent and because if possible he would like to determine insofar as feasible the future course that the trends are most likely to pursue. Fig. 1 is a chart showing in the space of a single page a complete picture of railway traffic and earnings for the past 16½ years beginning with the fiscal year ended June 30, 1911, the first year in which figures for the Class I carriers as such were compiled or totaled. The feature of the chart is that, although no less than ten curves are shown, in only four places does one curve cross another—namely, in 1920 when net railway operating income was so low as nearly to approach the vanishing point. This result is obtained by using the semi-logarithmic or ratio scale whereby the curves are shown in small space in spite of the fact that there are plotted amounts varying between less than 100 million on the one hand and exceeding 400 billion on the other. Besides this, the use of the ratio scale assists in presenting the true relationship between the figures. An increase or decrease of a given percentage in any item on the chart will show the same degree of upward or downward inclination regardless of the magnitude of the item or its position on the chart. If the ordinary arithmetical scale were used the fluctuation in the large items—could they be put upon the chart at all—would be more pronounced than and entirely out of proportion to the same relative fluctuations in the smaller items.

The chart is in three parts. The upper part—comprehending a measure between 10 billions and 600 billions—shows the revenue ton-miles, the revenue passenger-miles and the investment in road and equipment as shown by the carriers' book accounts, exclusive of materials and supplies and cash. The second part—comprehending a scale between 40 millions and 7 billions—contains the curves of total operating revenues, total operating expenses, the payroll, the net railway operating income or net after equipment and joint facility rents, the net income available for dividends after interest and other fixed charges, and the taxes. The curve of net income includes the standard return received by the railway corporations for the operations of their properties by the Railroad Administration during the period of federal control, and the guaranty for the so-called guaranty period from March 1, to August 31, 1920, which standard return and guaranty were paid not entirely from the railways' own operation, but largely out of the national treasury. The third part of the chart shows the rate of return or ratio that net railway operating income bears to the property investment, inclusive of materials and supplies and cash.

Table I—Changing Relationships in the Railway Figures Indicated in Per Cents—Class I Railways

					Per Cent Increase	
Billions	1911	1916	1923	1926	1926 Over 1916	1926 Over 1923
Revenue ton-miles	250	340	413	444	30.6	7.6
Revenue passenger miles	32.4	33.6	38.0	35.5	5.5	—6.5
Billions of dollars						
Property investment	14.2	16.7	20.7	22.6	35.6	9.6
Total operating revenue	2.75	3.38	6.29	6.38	88.7	1.5
Total operating expenses	1.90	2.21	4.90	4.67	111.2	—4.6
Pay roll	1.17	1.37	3.00	2.95	115.9	—1.8
Millions of dollars						
Net railway operating income	724	985	962	1,213	23.2	26.1
Net income after charges	489	603	555	805	34.3	46.0
Railway tax accruals	99	146	332	389	167.3	17.2
Per cent						
Rate of return on investment	4.84	5.65	4.42	5.11	—0.54	0.69

What the Trends Since 1911 Show

The upward or downward course of the trends and particularly the relative slope of the various lines merits intensive study. Interest centers at certain points, namely, 1911, 1916, 1920, 1923 and 1926; 1911, because it is the first year shown; 1916, because every curve shows a substantial rise in that year; 1920, because it marks peaks in the traffic, operating revenues, operating expenses and the payroll accompanied by the disappearance from the bottom of the chart of the line showing net railway operating income; 1923, because it signalizes after the war recovery, and 1926, because it is the latest

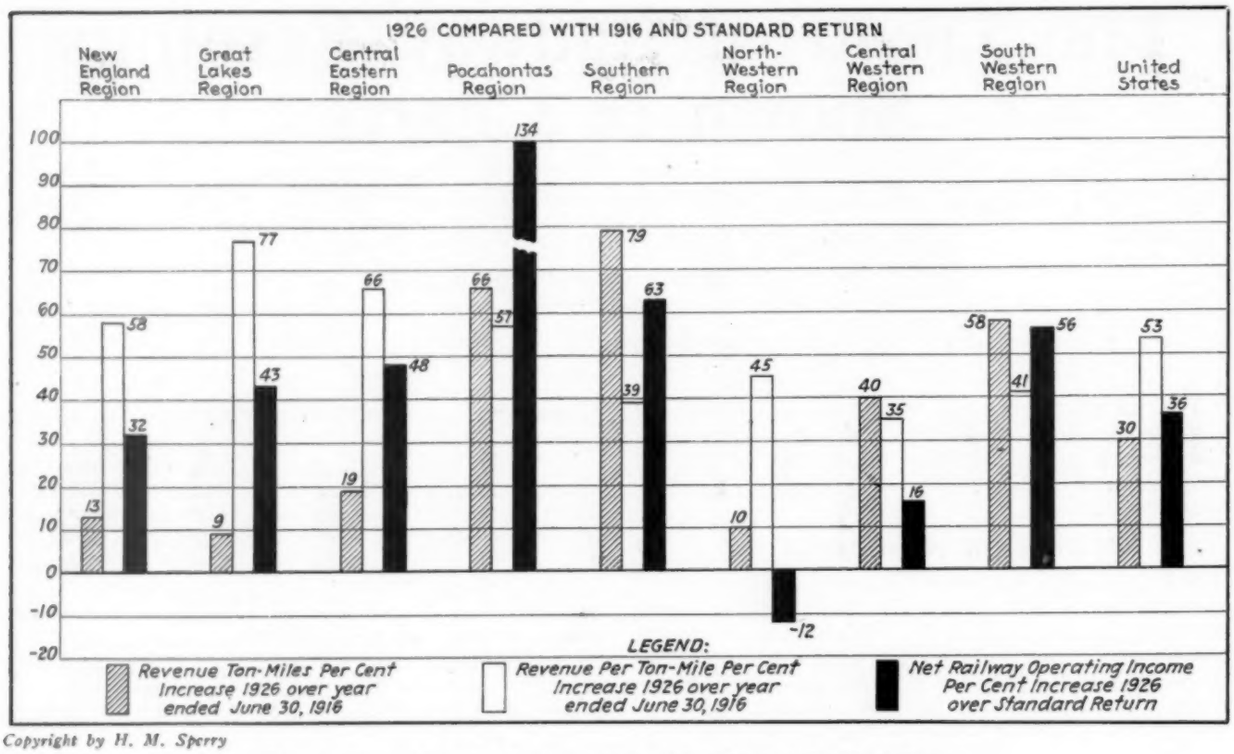


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Fig. 2—Comparison by Regions, 1926 with 1916 and Standard Return

year and in some respects the best year. In the more recent years there is evidenced a comparatively slow increase of freight traffic culminating in a peak in 1926. On the other hand, the trend of passenger traffic has been generally downwards since 1920, so that the increase in 1926 over 1911 is but slight. Of particular interest is the widening space since 1920 between the curves showing operating revenues and operating expenses, respectively, but the space in 1926 is, nevertheless, not yet as wide as in the earlier years shown on the chart. Particularly satisfying is the marked upward trend of the lines showing net railway operating income and net income, especially of the latter. Less satisfying is the steadily upward trend of railway taxes; the taxes increase in greater ratio in some years than in others, but never show decreases.

Comparison by Regions

It is when one attempts to ascertain in which sections of the country occurs the improvement averaged for all sections in Fig. 1, that one finds particularly interesting changes in relationships.

The relative present degree of prosperity of the railroads in the different parts of this country is continually kept before the public by the rate of return by regions reported monthly and annually by the Bureau of Railway Economics. The figures for 1926 and 1923 follow:

	Rate of Return Per Cent	
	1926	1923
New England region	5.06	2.32
Great Lakes region	5.49	5.30
Central Eastern region	5.24	4.85
Pocahontas region	9.21	5.73
Southern region	5.48	5.02
Northwestern region	3.83	3.45
Central Western region	4.86	4.50
Southwestern region	4.56	3.65
Total United States	5.13	4.48

NOTE.—These do not agree with the percentages shown in Table I because of the inclusion in this table of switching and terminal companies.

Why should the Pocahontas region be the only region to show in 1926 a rate of return in excess of 5.75 per cent? Why should it and the New England region be the only ones to have shown really substantial improvement over 1923? Why should the Northwestern region which was next to the lowest in 1923 have improved so little that in 1926 it was the lowest region? Why, indeed, should some regions have improved in greater or less degree than others?

1926 Compared with 1916

The writer believes that these questions are answered in Table II and strikingly presented in Figs. 2 and 3. In Fig. 2 there is given a comparison similar to that presented in the 1925 article, above referred to, except that whereas in the preceding article the results for 1923 and 1924 were shown they are now shown for 1926. The units compared are the revenue ton-miles, the revenue per ton per mile and the net railway operating income—respectively, the traffic, the rate level and the resultant thereof, the net. The comparison of the ton-miles and the ton-mile revenue is with the figures for the year ended June 30, 1916, taken because it is the middle year of the test period, or the three years ended June 30, 1917, and the more nearly average year of that period; the comparisons are presented in the form of the per cent of increase that the 1926 regional figures show over the corresponding regional figures for 1916. The net railway operating income is presented in the form of the per cent of increase over the standard return, namely, the average net railway operating income for the test period. The totals were not reported by regions in 1916, so it was necessary to go back to the reports of the individual roads and assemble the data by regions in the form in which the regions exist today. The value of the chart is that it gives a comparison as between 1926 and the conditions that existed just prior to America's entrance into the war.

The chart shows that in 1926 as compared with 1916 the roads of the country as a whole had an increase of

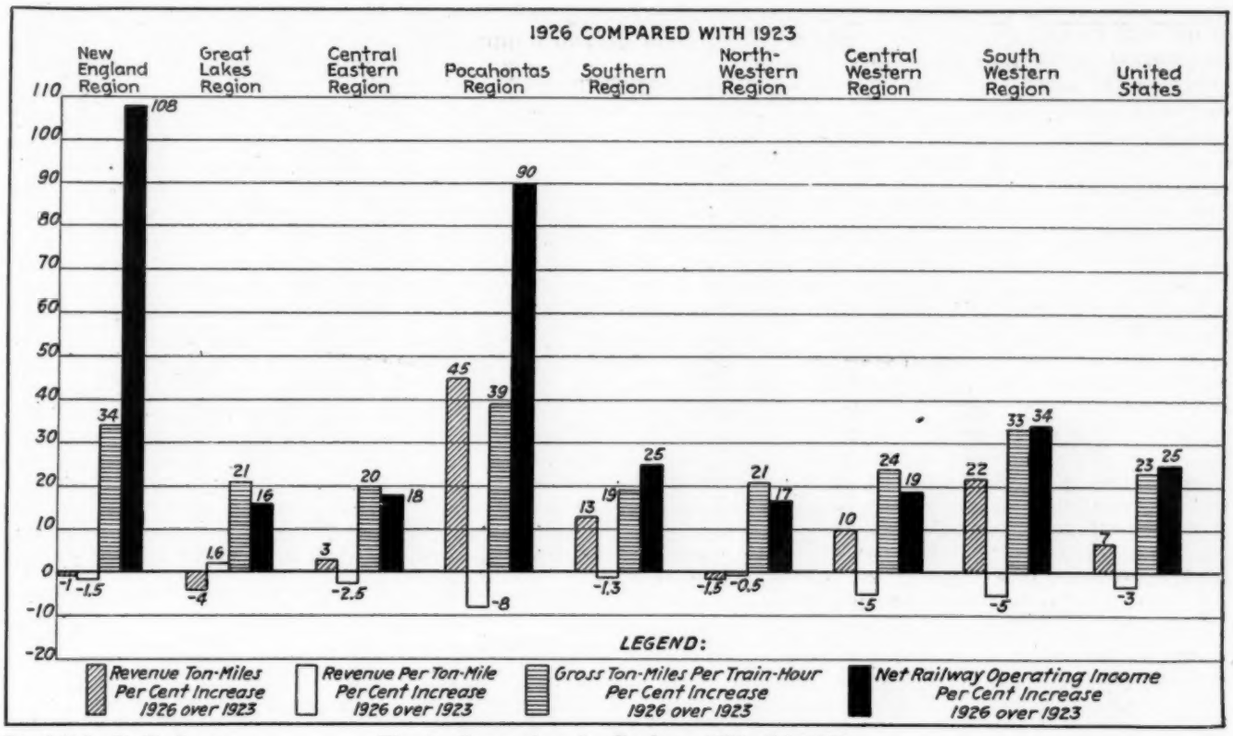
1926 COMPARED WITH 1923
New England Region
Great Lakes Region
Central Eastern Region
Pocahontas Region
Southern Region
North-Western Region
Central Western Region
South Western Region
United States
LEGEND:
Revenue Ton-Miles Per Cent Increase 1926 over 1923
Revenue Per Ton-Mile Per Cent Increase 1926 over 1923
Gross Ton-Miles Per Train-Hour Per Cent Increase 1926 over 1923
Net Railway Operating Income Per Cent Increase 1926 over 1923

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Fig. 3—Comparison by Regions, 1926 with 1923

30 per cent in their revenue ton-miles; an increase of 53 per cent in the revenue per ton per mile and that in 1926 their net operating income was 36 per cent greater than the standard return. Taking the 30 per cent increase in revenue ton-miles, it is discovered that four of the eight regions had increases greater than this ratio, these regions being the Pocahontas, the Southern, the Central Western and the South Western. Similarly, four regions had increases in their revenue per ton per mile greater than the average of 53 per cent for all the railroads, these being the New England, the Great Lakes, the Central Eastern and the Pocahontas. It will be noted that the Pocahontas region is the only region that appears both in the group of regions showing more than the average increase in revenue ton-miles and in the group of regions showing more than the average increase in the revenue per ton per mile but that the Northwestern region appears in neither group. Presumably this explains why the Pocahontas region had in 1926 net operating income showing the largest increase (134 per cent) over its standard return, and it also helps to explain why the Northwestern region should have been the only region to have earned less than in standard return.

It will be further noted that three of the four regions showing the larger increases in the revenue ton-miles are

Table II.—Comparison by Regions

NET RAILWAY OPERATING INCOME FOR 1926 SHOWN IN PERCENTAGE OF STANDARD RETURN AND IN PERCENTAGE OF NET RAILWAY OPERATING INCOME FOR 1923. REVENUE TON-MILES AND REVENUE PER TON-MILE FOR 1926 SHOWN IN PERCENTAGES OF FIGURES FOR YEAR ENDED JUNE 30, 1916, AND YEAR ENDED DECEMBER 31, 1923. GROSS TON-MILES PER TRAIN HOUR FOR 1926 SHOWN IN PERCENTAGES OF FIGURES FOR 1923

	New England Region Dollars	Great Lakes Region Dollars	Central Eastern Region Dollars	Pocahontas Region Dollars	Southern Region Dollars	North-western Region Dollars	Central Western Region Dollars	South-western Region Dollars	Total Western District Dollars	United States Dollars
Standard return	34,427,281	155,675,389	173,408,821	38,613,355	100,079,148	148,734,272	190,977,563	64,980,916	404,692,751	906,894,745
1923 Net railway operating income	21,776,122	192,094,769	217,847,961	47,696,463	129,764,446	112,236,458	186,641,828	75,678,178	374,556,464	983,736,225
1926 Net railway operating income	45,397,349	222,784,552	256,445,701	90,452,857	162,658,747	131,001,818	221,546,132	101,503,773	454,051,723	1,231,790,929
% of standard return	132	143	148	234	163	88	116	156	112	136
% of 1923	208	116	118	190	125	117	119	134	121	125
1916 Revenue ton-miles (thousands)	9,425,056	69,840,858	90,109,469	24,266,841	34,201,622	45,017,216	46,170,657	21,658,261	112,846,134	340,689,980
1923 Revenue ton-miles (thousands)	19,730,539	79,567,058	103,976,381	27,788,016	54,274,919	50,255,257	58,816,114	28,070,727	137,142,098	413,479,011
1926 Revenue ton-miles (thousands)	10,653,294	76,116,179	107,157,970	40,358,487	61,184,419	49,490,676	64,806,971	34,270,514	148,568,161	444,038,510
% of 1916	113	109	119	166	179	110	140	158	132	130
% of 1923	97	96	103	145	113	98.5	110	122	108	107
1916 Revenue per ton-mile (cents)	1.101	0.624	0.617	0.402	0.776	0.778	0.882	0.891	0.843	0.707
1923 Revenue per ton-mile (cents)	1.763	1.090	1.050	0.686	1.093	1.131	1.262	1.329	1.228	1.116
1926 Revenue per ton-mile (cents)	1.736	1.107	1.023	0.632	1.079	1.125	1.197	1.257	1.187	1.082
% of 1916	158	177.5	166	157	139	145	135	141	141	153
% of 1923	98.5	101.6	97.5	92.2	98.7	99.5	94.8	94.6	96.7	97.0
1923 Gross ton-miles per train hour	11,176	19,120	16,482	22,197	14,836	16,351	18,086	14,711	16,713	16,768
1926 Gross ton-miles per train hour	14,995	23,207	19,726	30,900	17,640	19,828	22,487	19,549	20,882	20,705
% of 1923	134.2	121.4	119.7	139.3	118.9	121.3	124.3	132.9	125.0	123.5

those regions in the southern part of the country whereas the four regions showing the greater increases in the revenue per ton per mile constitute the Eastern district as set up by the Interstate Commerce Commission for rate making purposes. Reverting again to the Northwestern region, it will be observed that it had an increase in 1926 over 1916 of only 10 per cent in its revenue ton-miles, the smallest increase shown by any region with one exception—the Great Lakes region. The increase in the revenue per ton per mile was greater than that for the Southern region, the Central Western region or for the Southwestern region but by no means as large as in the eastern regions, which would seem to indicate that the Northwestern region's difficulty lies in the fact that it has not had the increase in traffic of the regions in the southern part of the country nor the increase in rates that has been granted by the various rate proceedings in the intervening period to the eastern part of the country and, therefore, is suffering on both counts. The Central Western region showed next to the poorest improvement in its net operating income. The region had a 40 per cent increase in its revenue ton-miles but reported the smallest improvement in its ton-mile rate. The Southern region showed an increase of 63 per cent in its net railway operating income and ranked second to the Pocahontas region in that respect. It had an increase of but 39 per cent in its revenue per ton per mile or less than in any other region except the Central Western but to compensate for this fact it had an increase of no less than 79 per cent in its revenue ton-miles, the largest increase shown by any region.

1926 Compared with 1923

A similar comparison of the relationships of the traffic, the rate level, and the net operating income by regions is given for 1926 in Fig. 3, except that in this instance the 1926 figures are shown in percentages of those of 1923. The criticism may be offered that changes in the amount of traffic and in the rate level, while (judging from Fig. 2) being of the greatest value in explaining changes in the net operating income, are not entirely complete because they fail to take into consideration increased operating efficiency. In Fig. 3 the effort has been made to meet this criticism by using that one of the indices of railroad operating efficiency which in a single unit, seems most adequately to combine within itself more factors indicating efficiency than any other. This is the unit of gross ton-miles per freight train hour, the product of the gross tons per train and the speed with which the trains are moved. The railroad that strives merely to increase its gross ton-miles per train hour may succeed in doing so by increasing either its train load or its train speed beyond the line of exact economy. On the other hand, it will be recognized that true success from the standpoint of reporting improved figures of gross ton-miles per train hour comes when there is both economical train loading and train-speed combined with the elimination of useless delays while the trains are on the road. The unit of gross ton-miles per freight train hour has been reported for all the railroads by regions since 1919. The comparison in Fig. 3 is made with 1923 primarily because 1923 was a busy year in which admittedly traffic was handled with outstanding efficiency. It might have been advisable to make a comparison over a longer period, say with 1920, but the difficulty is that several of the regions in 1920 reported net railway operating deficits which would make it impossible to show the 1926 net railway operating income as a percentage of the 1920 figures.

The striking thing shown by Fig. 3 is that, speaking generally, the increases in the traffic were not substantial, only three regions, the Pocahontas, the Southwestern and the Southern showing increases of over 10 per cent, while three regions, the New England, the Great Lakes and the Northwestern showed decreases. Similarly there was but a slight change in the rate level, and only one region, the Great Lakes, showed even a slight increase. There were, however, substantial increases in the net railway operating income, particularly in the New England region, which was out of line in 1923 and which showed in 1926 an increase of 108 per cent over 1923, and the Pocahontas, which was already prosperous in 1923, and which had superimposed upon that prosperity an increase in 1926 of 90 per cent in its net railway operating income. Considering the relatively small change in the traffic volume and the rate level, it is striking to find that with certain minor exceptions those regions that showed, in 1926 as compared with 1923, the greatest increase in their gross ton-miles per train hour, were also the regions which showed the greatest increase in their net railway operating income. The exact picture is stated in the following table in which the roads showing the greatest increase in each instance are named in the order of their per cent of increase:

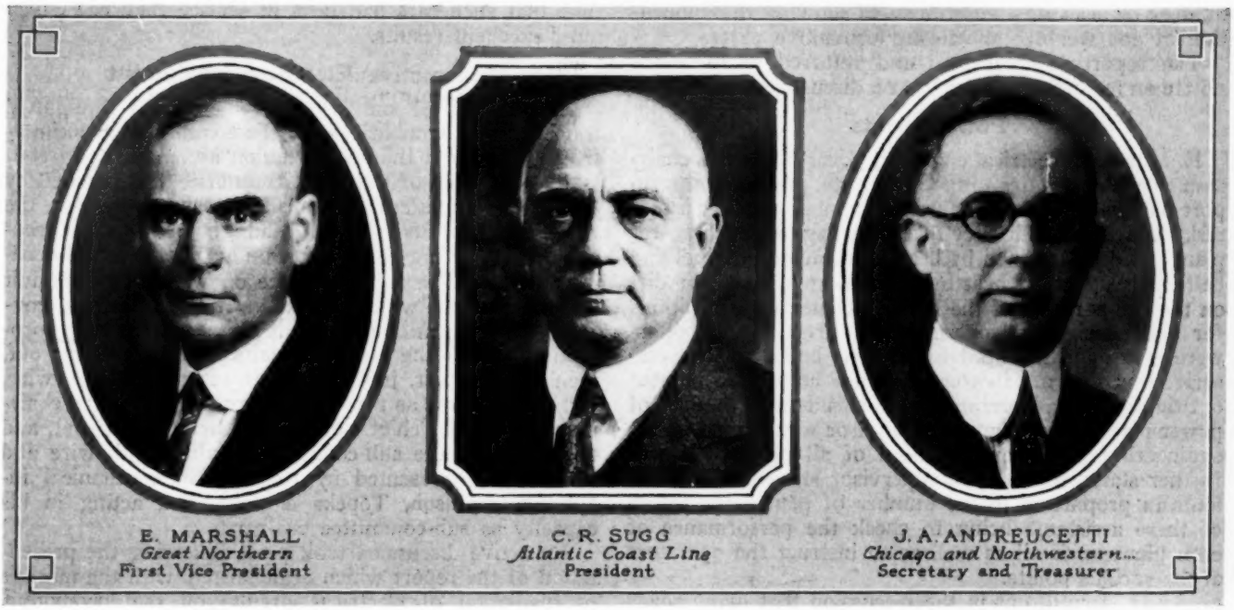
Gross Ton-miles Per Train Hour			Net Railway Operating Income		
Rank		Per cent of increase	Rank		Per cent of increase
1	Pocahontas	39.3	1	New England	108
2	New England	34.2	2	Pocahontas	90
3	Southwestern	32.9	3	Southwestern	34
4	Central Western	24.3	4	Southern	25
5	Great Lakes	21.4	5	Central Western	19
6	Northwestern	21.3	6	Central Eastern	18
7	Central Eastern	19.7	7	Northwestern	17
8	Southern	18.9	8	Great Lakes	16

The Pocahontas and New England region appear first and second, respectively, in their increase—1926 over 1923—in gross ton-miles per train hour while they were respectively second and first in their increase in net operating income. In each instance, the Southwestern region is third and otherwise the ranking with respect to the increase in train hour productivity parallels quite closely that relative to the increase in net operating income. The Southern region is an exception. It ranks eighth in increase in gross ton-miles per train hour but fourth in increase in net operating income. However, supplementing this is the fact that in the first seven months of 1927 the Southern region has had an increase in its gross ton-miles per train hour of 10 per cent while the average increase for all the roads of the country has been only 6 per cent.

The writer believes that this record is interesting evidence of the value of the unit of gross ton-miles per train hour because in the last analysis the purpose of increased operating efficiency is to increase the net operating income. All of the regions have shown some increase in their gross ton-miles per freight train hour and the increase has taken place whether there has been an increase in traffic or not. Indeed, it appears that the amount of increase in traffic has but secondary relationship to the amount of the increase in gross ton-miles per freight train hour.

A Tribute

When it is realized that in 1923 the railroads handled a record-breaking traffic without congestion of any sort and set up what was then considered to be a remarkable record of operating efficiency, it is striking that but three years later every region should have been able to improve its 1923 efficiency record to such an extent that in only one instance was the increase in gross ton-miles per freight train hour less than 20 per cent. This is remarkable testimony to the increased skill with which the railroads are meeting the problem that confronts them.



E. MARSHALL
Great Northern
First Vice President

C. R. SUGG
Atlantic Coast Line
President

J. A. ANDREUCETTI
Chicago and Northwestern...
Secretary and Treasurer

Electrical Men Discuss Problems

Annual convention of A.R.E.E. is marked by well attended sessions—Keen interest shown in exhibits of supply manufacturers

THE Association of Railway Electrical Engineers held its eighteenth annual convention last week in Chicago at the Hotel Sherman. The first session was called to order at 10 a. m. October 25, at which time the president, C. R. Sugg, electrical engineer of the Atlantic Coast Line, made the opening address.

Mr. Sugg reviewed the history of the association from its beginning, May, 1908, when the organization was known as the Association of Car Lighting Engineers. He pointed out that car lighting was no longer the sole concern of the members but that the increase in the use of electrical energy in many forms had increased the duties and responsibilities of electrical men many fold. The increase in the use of electrical energy, he said, is because of its economic value, and because it can be more readily transmitted, transformed and converted into mechanical energy than any other form of available energy. In the latter part of his address Mr. Sugg touched upon the subject of electric traction. He said he believed that the principal reason why electrification has not been more general is because of the failure of engineers to agree on a standard system and voltage. In connection with the increase of electrification as well as the increase in other applications of electrical energy, Mr. Sugg stated that railroads would soon be obliged to create electrical departments with greater authority than has been common in the past.

Following the president's address the report of the secretary-treasurer, Joseph A. Andreucetti, electrical engineer of the Chicago & North Western, was presented. Mr. Andrecuetti's report showed the association to be in a most excellent financial condition with a balance of $5,717.

Election of Officers

In the election of officers the following were elected: President, E. Marshall, electrical engineer, Great Northern; first vice-president, J. L. Minick, assistant electrical engineer, Pennsylvania System; second vice-president, J. C. McElree, electrical engineer, Missouri Pacific. On the executive committee F. W. Reade, chief electrician, Northern Pacific, and G. W. Bebout, electrical engineer, Chesapeake & Ohio, were chosen.

The Manual

The report of the committee on the manual, which was the only report presented at the first session, was brief. It covered three points as follows: Revision of manual, standardization of the form of the committee report, and preparation of subject matter for the manual. In the absence of the chairman, L. S. Billau, assistant electrical engineer of the Baltimore & Ohio, the report was read by Mr. Andreucetti. There was no general discussion.

Electric Welding and Heating

The report on electric welding and heating was presented by the Committee Chairman, F. H. Williams, assistant test engineer, Canadian National. Mr. Williams did not read the report, which was long, but presented the subject matter in the way of the lecture with the aid of numerous lantern slides showing the microscopic structure of various steel specimens. The actual report was concerned with the metallurgy of iron and steel with reference to heat treating. The second part of the report dealt with gas welding under which heading the care of oxy-acetylene torches and equipment was discussed. A

number of drawings were included showing the application of gas welding to various locomotive parts.

The report was accepted and referred to the committee on manuals. There was no discussion.

Power Plants

E. Marshall, electrical engineer, Great Northern, chairman of the committee on power plants, presented the report on this subject. The report pointed out that a material increase in efficiency of the average railroad power plant could be obtained by better combustion of fuel and better absorption of heat by permitting less soot or dirt on the fire surfaces of the boiler. General specifications for good design and operation of furnaces and boilers were given and the need for various boiler room accessories was shown. In conclusion the committee pointed out that each road operating any considerable number of power plants should have a supervisor who should be the engineering and operating head of all plants. It was further stated that such a supervisor should have assistants in proportion to the number of plants, the duties of these assistants being to check the performance of each plant in detail as well as to instruct the operators at the various points.

It was brought out in the discussion that many roads have power plants which are extremely inefficient. This inefficiency, it was pointed out, can be corrected by the application of definite and well known principles in good boiler design. It was generally conceded that boiler room accessories would go far toward improving boiler efficiencies as by the means of such facilities the actual performance of any particular boiler became definitely known.

Train Lighting

The next report was that of the committee on train lighting. This was presented by P. J. Callahan, supervisor of car and locomotive electric lighting, Boston & Maine. One of the outstanding features of this report was the recommendation that a 32-volt system be adopted as this would permit the use of axle lighted cars in the same train with cars receiving current from a turbo-generator on the locomotive. General specifications for the design and installation of such turbo-generators were given. The conduit and wiring of both locomotives and cars was briefly outlined. The growth of locomotive train lighting systems throughout the country during the past year was shown in tabulated form both for turbo-generators in excess of 5 kw, and for those of 2½ kw. rating. For future work the committee recommended investigation into the following subjects: Rubber and fabric faced pulleys, lighting of parked Pullman cars, application of electric marker lights to rear of electric lighted trains, standard axle pulleys, bushings and electric power for refrigerator, dining, club and business cars.

There was a lively discussion on the clause which recommended that 32 volts be adopted as the standard of the association and it was not until the clause was amended to read "32 volts where practicable" that that portion of the report was accepted. Rubber and fabric faced pulleys were discussed and it developed that considerably better results had been obtained with the latter type than with the former. The subject of lighting parked Pullman cars for use at large conventions was touched upon, but no specific solution for this problem appeared to be forthcoming, although a number of methods were suggested. Electric refrigeration for diners was briefly discussed but the advent of this type of equipment was considered too recent to draw definite conclusions although it was stated that for the short time that such cars had been in service they had given most excellent results.

Locomotive Electrical Equipment

The committee on locomotive electrical equipment consisted of a combination of the committee on locomotive lighting and the committee on automatic train control. The work of this joint committee was handled by four sub-committees, responsible respectively for the following subjects: Glass headlight reflectors, turbo-generators, wiring and conduit on locomotives, and headlight cases. The sub-committee on wiring and conduit was the only one which reported. In a specification covering the application of conduit fittings and wire to locomotives, all of the essential features were brought out, including conduit, junction boxes, terminal blocks, wire, etc. The report as a whole was presented by the chairman, F. J. Hill, chief electrician, Michigan Central, and the report of the sub-committee dealing with wire and conduit was presented by Roy Liston, mechanical inspector, Atchison, Topeka & Santa Fe, acting in his capacity as sub-committee chairman.

An active discussion took place following the presentation of the report which dealt largely with the matters of insulation of electrical circuits on the locomotive. Numerous opinions were offered as to how this might be best accomplished. It was generally conceded that it was practically impossible to install conduit so as to exclude moisture entirely. Best results are to be secured by making use of the best available insulation material for terminal blocks as the majority of troubles appear to originate at these points. The general trend of maintenance appeared to be towards better insulation, and roads originally experiencing trouble reported that failures were becoming fewer as the grade of maintenance and quality of materials were improved.

Self-Propelled Vehicles

The report on the subject of self-propelled vehicles was read by Mr. Andreucetti, in the absence of the chairman, R. G. Gage, chief electrical engineer, Canadian National. The report was brief, its outstanding feature being the announcement of the completion of two instruction books covering two different makes of gasoline-electric cars. For future work, the committee recommended that it complete any unfinished work in connection with instruction books and that it make a study of forms to record maintenance and operating data for rail cars. It was also recommended that the committee study and submit a report on the use of oil engines in rail car service.

There was little discussion on the report. It was accepted and committees continued. The acceptance carried with it the approval of the instruction books compiled by the J. G. Brill Company and the Mack-International Company and both of these companies were to be notified of the action of the association so that they might proceed with the final printing of the books.

George T. Johnson, assistant electrical engineer of the New Haven, presented the report on the installation and maintenance of electrical equipment. In brief the report submitted a list of specifications, some general and some specific, for the installation and care of electrical apparatus. The list included switchboards, power panels or sub-stations, motors and control apparatus, wiring and portable equipment. There was little discussion on the report which was accepted and the committee continued.

The report on motors and controls made specific recommendations relative to the kind of equipment best

suited to various uses. The committee specifically warned against purchase of motors on a price basis, pointing out that while high speed motors are the least expensive, they are frequently not adapted to the service to which they are put. The result of such an installation is that the motor may run hot even though the horsepower rating appears to be ample.

A series of curves was presented in which were contrasted the effects on voltage, current and power factor by motors started with compensators and by the more modern method of throwing motors directly across the line. Across-the-line starting seemed to be favored over the compensator method especially for motors of less than 100 hp. General specifications for heavy duty controls such as are used in connection with coal or ore dock machinery operation were included in the report. The importance of keeping reliable records, such as causes of failure, cost of repairs and nature of remedy applied, was emphasized.

The report was presented by J. L. Parker, chief electrician, Atlantic Coast Line. In opening the discussion, Mr. Parker pointed out the importance of standardization of the drilling for various motors mounting plates so that motors of different manufacturers could be used interchangeably with a minimum of trouble.

Much of the discussion dealt with the advisability of maintaining a high power factor and opinions appeared to differ as to the extent of its importance. Contracts with power companies especially with regard to power factor clauses and maximum demand clauses received considerable attention.

In touching upon the subject of standardization of motors, Mr. Minick, assistant electrical engineer, Pennsylvania System, pointed out that the manufacturers, while they would like to have such standardization brought about, could not see the way clear to effect it. This is due to the fact that such keen competition exists as to make it next to impossible to make the slightest change of design without favoring a competitor. The report was accepted and referred to the committee on manuals.

Illumination

L. S. Billau, assistant electrical engineer, Baltimore & Ohio, presented the report on illumination.

Aside from recommending certain changes in the lighting manual the committee on illumination concerned itself with the development of incandescent lamps for train and locomotive lighting. Particular emphasis was placed upon the importance of burning lamps at their rated voltage. The report included numerous tables showing the demand for lamps of various sizes for both train and locomotive lighting. Lamps for motor coach service were also included and the development of lighting on this branch of transportation was shown in tabulated form. Floodlighting of railroad yards was not approached from the standpoints of actual installations but in a comprehensive appendix to the report, methods for making a detailed analysis of the floodlighting projector itself were given, including the general procedure for the photometry of such lighting units. A new type of 1000-watt floodlighting lamp was exhibited by the committee.

Supplementing the report of the committee a talk was given by a representative of one of the lamp manufacturers in which it was forcefully demonstrated by a number of experiments, the effect of varying voltage upon the lamp life. It was clearly shown that while an increase in voltage greatly increased the candle power of the lamp, this result was only to be obtained at the sacrifice of lamp life. There was no discussion.

Ray Liston, mechanical inspector, Atchison, Topeka & Santa Fe, chairman of the committee on the Application of Radio to Railway Service, gave a brief resume of some tests of radio communication between locomotive and caboose that were being conducted on New York Central equipment. The apparatus being used was manufactured by the General Electric Company. It was pointed out that the work was in the experimental stage, although the tests made were generally successful. In the discussion which followed this report the interest was centered upon the question whether or not the Association of Railway Electrical Engineers should continue to maintain a committee on the subject of radio communication. Although a few seemed to feel that the work belonged to the Telegraph and Telephone Section of the American Railway Association, it was clearly the opinion of the majority that the electrical engineers should continue to keep in touch with the subject as it would probably fall to their lot to maintain such equipment after it has been satisfactorily developed. The action of the association was to continue the committee.

Supply Men Elect Officers

At the annual meeting of the Railway Electrical Supply Manufacturers Association which was held on October 27, the following officers were elected for the ensuing year: President, G. R. Berger, Manheim Manufacturing & Belting Company; senior vice-president, Wm. A. Ross, Pyle-National Company; junior vice-president, J. McC. Price, Industrial Controller Company. Members of the executive committee to serve three years are J. T. B. Addington, Benjamin Electric Company; H. R. Pennington, C. H. Hollup Corporation; C. W. Bates, Square D Company. For unexpired term on executive committee to serve two years, E. H. McNeil of the Okonite Company was chosen.

Michigan Central Voluntary Train-Stop Approved

WASHINGTON, D. C.

DIVISION 1 of the Interstate Commerce Commission has approved, with exceptions, the installation of the automatic train-stop system of the General Railway Signal Company on the West division of the Michigan Central from Niles, Mich., to Kensington, Ill., 78.47 miles, adjoining the territory between Detroit and Niles which includes the Detroit and Middle divisions. This was the first voluntary installation approved.

The additional installation was made voluntarily, the report says, after the train-stop system had been in use on the Detroit and Middle divisions "a sufficient length of time to demonstrate its practicability from an operating standpoint." The carrier reported that it was felt that to get the benefit of all the protection the system might afford for main line traffic between Detroit and Chicago the West division should likewise be equipped, and this was accordingly done. Kensington is within the city limits of Chicago and is the point at which Michigan Central trains enter the tracks of the Illinois Central electrified line to run to Central Station. The majority of the locomotives operating between Detroit and Chicago were equipped with the device to operate over the Detroit and Middle divisions. Forty-eight additional locomotives were equipped and on April 1, 1927, the system was placed in service in connection with the ten interlockers located on the West division.

The cost of the roadway equipment for this division was reported as $41,415 and that of the locomotive equipment as $66,766, a total of $108,181.

Notes on the Steam Locomotive

A statement of objectives and an opinion as to the form in which they may best be attained

By H. A. F. Campbell

SUPERHEATING, higher pressures, feedwater heating, compounding, and limited cut-offs, have raised the energy available for traction, that is the final overall locomotive thermal efficiency, from four or five per cent to eight per cent and even 10 per cent, based on the cylinder horsepower. When we consider the tremendous drop of temperature from over 2,000 deg. F. at the firebox end down through the boiler to the steam at the cylinder, which is about 650 deg. F., it is evident that the saving of a few per cent from this 700 deg. F. on down through the cylinder does not assume such importance. It is like having a head of water 2,000 ft. high and trying to make a big saving in the last 650 ft. of fall.

The problem from the motive power standpoint, however, is not so much to save a few per cent of coal or water. The real problem is to buy at reasonable first cost a locomotive that will produce the maximum tractive force, and maintain the maximum horsepower at the drawbar for the greatest number of hours in the year, at the least cost for wages.

By all means, keep down the coal and water; they must be reasonably low. But the most important considerations are initial cost, continuous service and minimum outlay of wages for upkeep. The motive power man is not as worried as he should be in regard to the upkeep of the rail, road bed and bridges. These costs do not show against him, but road and bridge upkeep does represent heavy yearly costs to the railroads.

Extended study is being given to the question of using higher steam pressure for locomotives in order to obtain a more powerful, and a more economical locomotive. The following table shows the power output, and overall locomotive thermal efficiency of seven examples of the most modern locomotives. This table shows that, thermodynamically, the higher pressure does not show the economy that might be expected. Example No. 7 shows a locomotive using only 235 lb. which is in advance whether from the standpoint of economy or power output in relation to weight of locomotive. But there is a reason for it. This locomotive represents the most advanced design of compound engine with superheating, in combination with refined boiler and front end designs. Even more important, these compound locomotives are driven by men who are real artists in their work.

E. C. Schmidt and J. M. Snodgrass, in a paper entitled "The Use of High Steam Pressure in Locomotives," presented before the 1926 annual meeting of the American Society of Mechanical Engineers, and Lamford H. Fry, in a paper entitled "High Pressures in Locomotives," read at the 1927 spring meeting of the same organization, presented to us in an interesting and very readable way the latest progress that has been made in the application of higher steam pressures to locomotives. Both papers restate to us some fundamental information on the thermodynamics of cylinder performance when using moderate, medium, and high boiler pressures and good superheat.

The practical side of the problem seems to be as follows: What combination of working pressure, cylinder arrangement, and boiler proportions will give a more powerful locomotive, say 4,000 cylinder horsepower, and a more economical locomotive, say, for example, nine per cent overall thermal efficiency?

First, as to pressure and cylinders. If we use 400 lb. and two simple cylinders, or 250 lb. and compound cylinders, we could find certain diameters and strokes that would give about the same indicated horsepower for each case. The indicator cards would be about as shown in the sketch.

It is the force applied between the 45-deg. angles that pulls trains. Which card is going to produce the more force to turn the cranks between the 45-deg. angles? Which card is going to give the better thermal efficiency, 400 lb., with bad wire drawing and released to the stack at over 100 lb., or 250 lb., with little wire drawing, and released at 25 lb.? Which card will have the actual smaller clearance volume, relatively to the actual steam admitted? Which card will give tremendously high peak loads on the machinery, and on all the bearings and, therefore, will require much heavier machinery?

When we set out to try to imitate a gas engine indicator card on a locomotive, we run into trouble mechanically. There is no doubt that such a locomotive of 4,000 i.hp. could be made; it is a possibility. But, even if it could, either the engine would wreck itself or the track and, in any case, it would cost greatly more to build and maintain than the 250 lb. pressure locomotive.

Raising the working pressure just for the sake of using higher pressure, insofar as it applies to the locomotive, will not bring about anywhere near the thermal economy that the theory or even practice might expect. In fact the result will be quite disappointing not only thermally, but mechanically. To meet present-day operating conditions, it is certain that we must have, more and more, great starting power, combined with the greatest possible sustained drawbar pull at speed and the least possible damage to the track and bridges.

A Comparison of Thermal Efficiencies and Weights per Horsepower

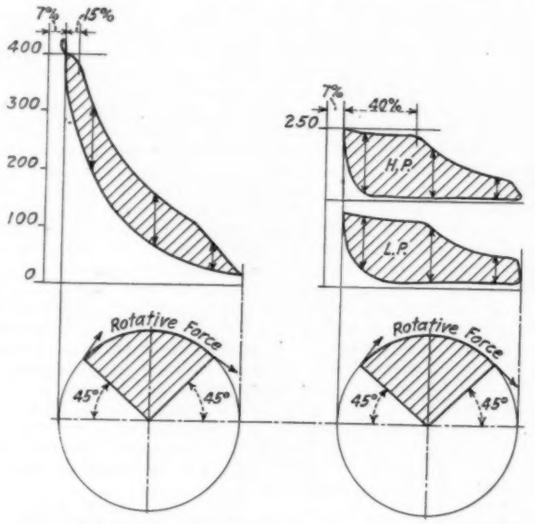
	Boiler pressure lb. per sq. in.	Type	Country	Max. i.hp.	Lb. of locomotive per i.hp.	Overall thermal efficiency,* per cent
1	350	Two-cyc. compound	United States	2,500	136	8.72
2	350	Three-cyl. compound	United States	4,500	100	7.89
3	250	Three-cyl. simple	United States	3,000	125	7.47
4	250	Two-cyl. simple	United States	3,700	100	7.00
5	250†	Three-cyl. compound	United States	3,000	152*	7.90
6	225	Four-cyl. simple	England	2,000	88	8.25
7	235	Four-cyl. compound	France	3,000	80	10.60

*Based on cylinder i.hp

†No. 2 throttled down and tested at 250 lb.; the engine design was for 350 not 250 lb.

The writer, in the October 20, 1923, *Railway Age*, stated: "Within the given space it is necessary to produce more power per unit of heat, while at the same time reducing the steam consumption per unit of power. This is absolutely necessary in order to keep the evaporation and the production of the steam that will be required within the possibilities of our track and clearances.

"Furthermore, the engine must have a good ratio of weight to power; 100 lb. weight per i.hp. or less. Also



2-Cylinder Simple

Fig. 1

3-Cylinder Compound

Fig. 2

it is always necessary that this engine must be an operating proposition; that is, low in upkeep."

Since 1923 several interesting and very advanced types of locomotives have been designed, built and tested. Still more advanced types are in contemplation. The writer has not changed his opinion of 1923; in fact, today after four years, he is more confirmed in it.

The railroads of the United States require locomotives both for freight and passenger trains that will: Not exceed a certain maximum weight on drivers. Have no dynamic augment in the driving wheels. Have maximum starting power and the greatest possible sustained tractive force at speed. Be fairly low as to coal and water consumption. Keep up and maintain a high boiler efficiency at maximum cylinder power. Be low in maintenance and first cost.

To meet the above conditions and considering the problem from the standpoint of first cost, power output, weight, low cost of maintenance of itself and of the track, and good thermal economy, the writer believes that, in the last analysis, for either freight or passenger, the three-cylinder compound with 250 lb. working pressure, with high superheat, say 300 deg. F., if possible, with a boiler with very large firebox volume and large steam space, and a front end entirely cleaned out of obstruction, is the machine that will best meet the requirements.

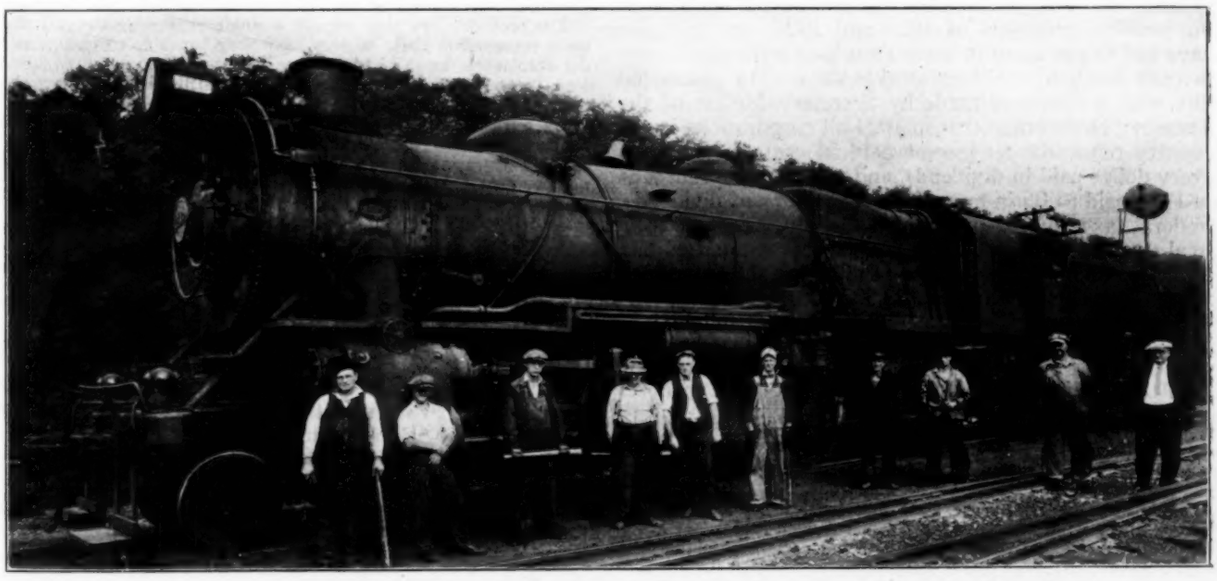
The requirements, of course, can be partially met by a two-cylinder simple engine. Thermally, either locomotive will be good. But the point to keep in mind is that the thermodynamics of the cylinders is not the biggest question, unless we can invent some way to save a really big proportion of the 90 per cent to 95 per cent of energy that now goes up the stack.

The locomotive that produces cards like those in Fig. 2 will always be the easy engine on bearings, on tires, and on the track. And, above all, it will maintain a drawbar pull at speed that the locomotive with cards like those in Fig. 1 could not even attain, let alone maintain.

A Truly Safe Yard

FOR 534 days, trains were classified over the hump at Venango, Pa., on the Pennsylvania, without damage to a single car. This remarkable record was established between March 19, 1926, and September 2, 1927, during which period 281,940 cars were received, classified and forwarded. The 534-day period was broken on September 2, when the brake chain on a car loaded with sheet steel became fouled and the rider was unable to slow it down sufficiently to avoid crashing into a draft of cars. The steel shifted and broke the end of the car, causing damage amounting to $25. During this entire period there was not a single personal injury in Venango yard.

Venango yard is on the Allegheny division of the Pennsylvania, 10 miles south of Oil City, Pa. Northbound loaded trains form the bulk of the traffic han-



This Crew Humped 281,940 Cars in 534 Days Without a Personal Injury or Damage to a Single Car

dled. A few southbound empty cars are classified, but the number of these is negligible. An average of 528 cars is classified at this yard daily. Coal constitutes about 60 per cent of the traffic handled, the remainder being largely manufactured products. This freight originates at points south of Venango, along the Allegheny river, and from Pittsburgh and the Pittsburgh district, northern West Virginia and eastern Ohio. Venango is the gateway where classifications are made for Erie, Pa., Buffalo, N. Y., points between Oil City and Buffalo, the Chautauqua branch, the Salamanca branch and Olean, N. Y., and Rochester.

The receiving yard consists of eight tracks, with capacities of from 50 to 70 cars each, while the classification yard consists of nine tracks, with capacities of from 60 to 75 cars each.

Normally, only one eight-hour shift and one engine are worked at Venango, although this is increased to two or even three shifts during periods when the volume of traffic justifies it. The normal force consists of 10 men, all of whom are shown in the accompanying illustration. This force includes a yard-master, engineman, conductor, fireman, scale agent, switchtender, and four brakemen. The youngest of these men has been in the service of the Pennsylvania for 10 years, the oldest, 35 years. The record made is attributed to the morale and experience of this crew. Each member is proud of the record for safety that has been made, and after the single unavoidable accident on September 2, each man expressed the determination to start a new record.

Urge Cut in Railroad Taxes

A REDUCTION of the Federal corporation income tax from the present rate of 13½ per cent to 10 per cent, or to a figure as nearly approaching that figure as existing conditions will permit, was urged on behalf of the railroads at a hearing before the House ways and means committee on November 2 by C. S. Duncan, economist for the Association of Railway Executives.

Pointing out that the federal taxes paid by the Class I railroads in 1926 amounted to $109,817,494, or an increase of 2,122 per cent over those paid in 1911, Dr. Duncan also showed that for the past seven years, with the possible exception of 1921 and 1926, the railroads have had to pay more in taxes than they were able to pay in cash dividends to their stockholders. He contrasted this with a statement made by Secretary Mellon of the Treasury Department that in 1924 all corporations in the country reporting net income paid 54 cents in taxes for every dollar paid in dividends, and said that the railroads in 1924 paid $1.06 in taxes for every dollar of dividends. Federal taxes in 1926 amounted to 28 per cent of their total tax bill, he said. If the 10 per cent rate asked had been in effect, he said, their tax bill would have been lightened by approximately $28,500,000.

An abstract of the statement as presented follows:

Total taxes paid by Class I railroads in 1911 were $98,950,000. Five years later, in 1916, total taxes on these roads had risen to $157,113,372. In 1926, total taxes paid by Class I railroads amounted to $388,922,000, or an increase of 293 per cent over 1911. For the first eight months of 1927 tax accruals of Class I railroads amounted to $249,764,400.

In 1911 the taxes paid to the various state and local governments by Class I railroads were $94,000,000. In 1916 they were $150,075,862. In 1926 these state and local taxes amounted to $280,650,000, or an increase of 198 per cent over 1911.

In 1911 the federal government imposed certain special excise taxes upon Class I railroads amounting to $4,870,000. In 1916 the amount of Federal taxes paid by Class I railroads was $12,530,949. The amount of taxes pai to the federal government by Class I railroads in 1926 was $109,817,494, or an increase of 2,122 per cent over 1911.

In 1911 the per cent of total taxes paid by Class I railroads that went to state and local governments was 95 per cent, while 5 per cent went to the federal government. In 1916 the portion of total taxes to state and local governments was 92 per cent and the portion to the federal government 8 per cent. In 1926 the portion of the total taxes to state and local governments was 72 per cent and 28 per cent to the federal government.

The gross earnings per mile of road in 1911 for these carriers were $12,794. It would, therefore, require the earnings of 7,734 miles of road to pay the taxes for 1911. In 1916 the earnings per mile of road were $15,571 and it would require the earnings of 10,090 miles of road to pay the taxes for that year. In 1926 the earnings per mile of road were $26,974 and it would require the earnings from 14,418 miles to pay the taxes imposed.

In 1911 the percentage of taxes to total earnings was 3.6 per cent. In 1916 it was 4.4 per cent. In 1926 it was 6.1 per cent. That is, taxes in the last year took 6.1 cents out of every dollar earned. In 1911 it required revenues of 13 days for Class I railroads to earn their taxes. In 1916 it required the revenues of 16 days to earn their taxes. In 1926 it required 22 days for these roads to earn taxes imposed upon them. Taxes paid by Class I railroads in 1911 amounted to $270,211 each day. In 1926 they were more than one million dollars a day.

The Secretary of the Treasury has told you that in the year 1924 all corporations in the country reporting net income had such a burden of taxes that "for every dollar paid in dividends 54 cents were paid in taxes. I should like to call your attention to the situation with respect to Class I railroads for the same year. In the calendar year 1924 for every dollar paid in dividends Class I railroads of the country paid $1.06 in taxes. For the past seven years the railroads have had to pay more in taxes, with the possible exception of 1921 and 1926, than they were able to pay in cash dividends to their stockholders. The tax payments by Class I lines since 1920 are as follows:

1920	$272,061,453
1921	275,875,990
1922	301,034,923
1923	331,915,459
1924	340,336,686
1925	358,516,046
1926	388,922,000

Cash dividend payments of Class I railroads to stockholders are a wholly different story. In 1926, a relatively prosperous year for the carriers, cash dividends barely exceeded those paid in 1911, which were $397,068,724. Cash dividend payments by Class I roads from 1920 are as follows:

1920	$271,731,669
1921	298,511,328
1922	271,573,751
1923	296,127,048
1924	320,429,767
1925	342,020,885
1926	399,243,963

Since the railroads were returned to their owners in 1920, the total amount of new capital invested in railroad property and devoted to public service aggregates $.206,000,000. It is estimated for 1927 an additional capital expenditure of between seven hundred and seven hundred and fifty million dollars, will be made.

The records show that for not a single year since the railroads were returned to their owners have they ben able to earn, under the rate levels established by the Interstate Commerce Commission, the return on their value contemplated by the Transportation Act. The Transportation Act stipulated as a fair return for two years a ratio of 5½ per cent as between the value of railroad property devoted to and used in public service and their net railway operating income, with a possible addition of one-half of one per cent. At the expiration of that time the Interstate Commerce Commission, under the provisions of the Act, established a ratio of 5¾ per cent. The actual earnings have been as follows:

1920	0.09%
1921	2.91%
1922	3.64%
1923	4.42%
1924	4.32%
1925	4.75%
1926	4.99%

A reduction of the corporation income tax from 13½ to 12 per cent was advocated by Secretary Mellon of the Treasury Department in testimony before the committee on October 31. It was estimated that the change would amount to $135,000,000 a year. In opposing a repeal of the excise tax on automobiles Secretary Mellon said that the automobile is one of the railroad's chief competitors and that the railroads are paying heavy taxes to the United States government, a part of which is used for highway purposes.

Equipment Installations Less

Railway Business Association head sees railroads facing serious problem with 1928 *traffic increase and installations below retirements*

WITH the railroads facing a substantial increase in freight traffic in 1928 and equipment installations now falling below retirements, a serious situation is imminent, according to Alba B. Johnson, president of the Railway Business Association, in a letter to members of that organization dated October 31, 1927. It is serious news, he believes, that in the face of a probably substantial increase in freight traffic in 1928, due to causes specified, a gain in peak car-loadings over the last high point (1926) equal to the gain 1926 over 1925 would wipe out the present railway equipment surplus; but that as of October 1 cars on order were only 14,833; locomotives, but 134. The text of the letter follows:

"A serious situation seems to have developed in respect of Class I railway equipment as reflected in the report of the Car Service Division of the American Railway Association, published October 26, covering nine months to October 1. As has recently been usual, the installations of locomotives and cars were fewer than the retirements; but whereas heretofore through enlargement of units the total power and car capacity have constantly increased, the turn has come; the freight locomotive increments and modernizations since January 1 were exceeded by retirements measured in tractive pounds of effort; and the car capacity owned October 1 is only a quarter of one per cent greater than on January 1. This is shown in detail in the following table:

Freight Locomotives

	Pounds
Total tractive power Jan. 1	1,843,992,000
Oct. 1	1,824,180,000
Reduction 9 months	18,812,000
Or per cent	1.02

Freight Cars

	Tons
Total capacity Jan. 1	105,704,000
Oct. 1	105,968,000
Increase 9 months	264,000
Or per cent	0.25

"Apart fom the anxiety which all concerned should feel over transport preparedness at any normal time, are we not confronted with a probable traffic emergency in 1928? I allude to the strengthened buying-power of the farmers and to the impending resumption of low-priced automobile manufacture now held back for a demonstration of the new Ford model.

Small Margin of Surplus Equipment

"What was the capacity of good-order rolling stock not in active service at the 1927 peak?

"The latest equipment figures are for September 15. Car loadings in that week reached the highest point thus far reported in 1927. On September 15 good-order freight locomotives in storage numbered 3,820. The precise rating of these is not known. Some observers have assumed that stored power is almost always power nearest retirement. We are informed, however, by the Car Service Division that partial investigation seemed to show stored power more nearly equal in rating to the average locomotive. The following computation therefore estimates the average tractive power of good-order stored locomotives as equal to that of the average locomotive owned. On this basis the aggregate stored power was 184,384,000 lb. Total tractive power of freight locomotives owned was 1,824,855,000 lb.

"Of this power, 15.1 per cent was out of order. Assuming that under pressure the bad-order percentage could and would have been reduced 13 per cent (a point never yet reached) this would add to the good order freight locomotives stored 38,322,000 lb., giving tractive pounds available but not in use 222,706,000. This was the margin. The car loadings handled in the week of September 17 were 1,127,613. Active power plus the margin could have loaded 116.3 per cent of this or 1.311,-414 cars. The largest such burden of all time was the peak car loading in 1926. The question is how great a future advance over that summit could be handled with equipment now existing. If the high point in 1927 had equalled that of 1926—1,216,432—the 1927 power could have taken care of it with a margin left capable of 94,-982 car loadings more, or 7.8 per cent.

Car Surplus

"Good-order freight cars not in use September 15 numbered 149,367. Whatever the exact fact as to locomotives, cars are not selected for storage but are sidetracked wherever they happen to fall idle. Average capacity of surplus cars therefore would approximate the general average. On that basis stored capacity was 6,798,000 tons. Total car capacity owned was 105,967,000 tons. The bad-order percentage was 6.2 per cent. Assuming that in a car famine the bad-order percentage could and would have been forced down to 5 per cent (never yet attained) this would add to the good-order cars stored 1,272,000 tons, making car capacity available but not in use 8,070,000 tons. That was the factor of safety, or margin. Active power plus the margin could have loaded 108.7 per cent of the September 17 loadings, 1,127,613, or 1,225,715 cars. If the high point in car loading had equaled in 1927 that in 1926—1,216,432—the roads while performing that task would have had a reserve capacity for only 9,283 car loadings, or 0.8 per cent.

"The question is how much of an increase in car loadings over the last high point (1,216,432 in 1926) would be required to exhaust present rolling stock. To judge what the traffic increase might presently be if general activity broadened, it may be noted that from the 1925 peak, which scored what was then a new car-loading record, the increase in one year, at the 1926 peak, was 8.2 per cent. Traffic increase may be likened to a flight of steps. Each step is 1 per cent. If there were no further reduction in locomotive power owned, the locomotive supply would be exhausted before car-loadings had passed the seventh step, but at the current rate of net additions the freight car supply would be wiped out before car-loadings reached the second step. From the 1925 peak to the 1926 peak, loadings rose more than eight steps.

"What seem to be the prospects for 1928 traffic?

"Agricultural news leads us to count upon a combination of price level and size of production which will

give the farmers a substantial enlargement of power to buy manufactures. The United States Department of Agriculture on October 26 spoke of a 'marked improvement in the farm situation as compared with this time a year ago' and quotes its index of purchasing power of farm products in terms of non-agricultural products at 92 for September compared with 88 in August. On a total running into many billions a moderate percentage yields a gain capable by itself of turning an industrial and commercial recession into a vigorous resumption.

"Second only to improved farm prospects at this time is the extraordinary situation in the motor car industry due to the temporary suspension of production by Mr. Ford.

"Our best information indicates the probability of a heavy increase in manufacture through out a large part of the motor industry soon after the new Ford car gets into production. For three months to October 1 production of passenger automobiles was 730,340, compared with 1,048,211 for the corresponding quarter of 1926. On a 12-month basis this represents a drop of more than 1,200,000 passenger cars out of about 3,800,000. Country-wide surveys in the industry indicate that at least 1,000,000 orders for passenger cars are being held back until the Ford model can be appraised. Dealers say that the uncertainty is passed along to intending buyers at every price level, apprehending price or other changes. It is predicted that for a few months after considerable supplies of the new Ford model are in use on roads, perhaps toward spring, many thousands of intending purchasers of low-priced cars will observe its performance, and, when a judgment has been formed, will place orders either for the Ford or for some other make. This will be reflected in almost every branch of industry and trade.

"Oil is now in surplus. Motorists shifting from cars which they now have to one or another new machine will increase their mileage under stimulus of novelty and enthusiasm; new car users will further swell fuel consumption.

The Employment Factor

"Mills fabricating car parts or materials will go on full time. Other consumers of some of the same goods will protect themselves with orders covering a longer period of need than has recently been customary. Motor car supply factories, as well as many assembly plants, will carry out suspended plans for new machinery and buildings. We shall see a large-scale resumption of activity in the machinery and construction lines.

"Employment and pay rolls being fuller, individual consumption will be larger for shelter, furniture, food, clothing and luxuries. In short, the country will see that vast expansion of production and trade which ramifies from resumption in any occupation so vast as agriculture or the automotive industry, and in the latter case the turn will be sudden rather than gradual because waiting upon a particular expected event unpredictable in detail yet inevitable in one form or another within a few months. Improvement is reported in New England textiles.

"Manufacturers' and dealers' inventories generally are reported low. Replenishment of supplies in every line will complete the maximum activities realizable from such an upturn in production. Already as of September there is a let-up in mercantile failures, both number and amount of liabilities. Although still above 1926 these were the lowest this year, while banking suspensions for the third quarter involved well under one-third the liabilities a year ago and were the lowest since 1922 except 1925. Manufacturing insolvencies are still showing the strain of low margins of profit aggravated by reduced volume. With relief in the form of increased business this showing should be much improved. Banking reports indicate that an expansion of business such as these circumstances promise can be readily financed.

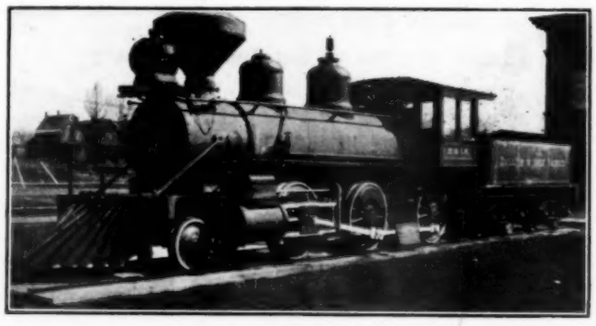
"In addition to the freight originating in general industry, trade and agriculture every railroad manager will face a great source of traffic on the rails of his system—namely, tonnage of other railroads enlarging their facilities. Every road, moreover, will be carrying materials of its own.

"For our railways to cope successfully with this emergency is of prime consequence to their owners and managers as well as to the public. When the railways were returned in 1920, the paramount responsibility of management was to demonstrate that private ownership could satisfactorily serve the public. Only so could they permanently discourage efforts toward another federal seizure. They have done it. Never was there so little criticism. Is it certain that this gratifying condition can continue in case of traffic increase substantially larger than we have seen of late? Evidently 1928 will bring a severe test. At each juncture from now on the preservation of private ownership will be a struggle between satisfactory service on the one hand and Plumb plan or other government-ownership propaganda on the other.

"Work performed per unit of power and per unit of car capacity is the resultant of all factors in railway optration and management and of co-operation by shippers. 'Car shortage' is the form in which the ultimate consumer, the shipper, sees a lack of facilities. As the Interstate Commerce Commission remarked on one of the several occasions when traffic has overwhelmed the carriers. 'In some cases it is simply a lack of cars, in others insufficient tracks and motive power, in still others wholly inadequate freight yards and terminal yards.' One ingredient in the remedy is to supersede obsolete types in rolling stock, track appliances, signaling and shops and to modernize units still usable. Nobody but the management of the individual railway is competent to judge what measures are called for. Is it not, however, timely to emphasize to railway owners and managers the impending condition?

Equipment on Order

"The Car Service Division reports freight cars on order October 1, 1927, as 14,833 (and these we are informed include some for private refrigerator companies) —compared with 16,846 October 1, 1926; locomotives on order, 134 (and these orders include passenger as well as freight locomotives)—compared with 443 a year ago."



First Locomotive of the Duluth & Iron Range—On Permanent Exhibition at Two Harbors, Minn.

Looking Backward

Fifty Years Ago

All the roads south of the Ohio river have joined the association recently formed at Nashville for the purpose of obtaining a uniform system of reporting individual car mileage. Reports were first made on a standard interchange form on November 1. —*Chicago Railway Review,* November 3, 1877.

The running time between St. Paul, Minn., and Bismarck, N. D., and the Black Hills has been shortened about 24 hours by the completion of the Western Railroad of Minnesota by the Northern Pacific from Brainerd, Minn., to Sauk Rapids. The first train ran over this route last week.—*Railway Age,* November 8, 1877.

The annual report of the Central of Georgia for the year ending August 31, 1877, signed by William M. Wadley, president, shows that a decrease of 32.8 per cent in the net earnings on the 284 miles of the Savannah division can be attributed largely to the yellow fever epidemic in Savannah, Ga. There were days during this epidemic, which was the most severe that has ever visited the city, when more than 25 per cent of the entire number of employees on the division were sick.—*Railroad Gazette,* November 2, 1877.

Twenty-Five Years Ago

By building 275 miles of line from its Pecos Valley extension at the Texas-New Mexico line, west to Rio Puerco on the Santa Fe Pacific, the Atchison, Topeka & Santa Fe will materially shorten the time between the Missouri river, the Pacific coast and Mexico. This will give the Santa Fe a second track from the Missouri to the center of New Mexico, nearly 1,000 miles long, which will avoid heavy grades between Trinidad and Albuquerque.—*Railway Age,* November 7, 1902.

In the hearing of the case of the State of Minnesota against the Northern Securities Company, the Northern Pacific, the Great Northern and the Burlington at St. Paul last week James J. Hill declared that the merger had stimulated the interchange of products of the West with the products of regions east of these lines. Industries had expanded along these lines, he said, and then painted an impressive picture of the expected increase in commerce with the Orient.—*Railway Age,* issue of November 7, 1902.

Ten Years Ago

Judge Lovett, priority agent, issued an order effective November 1 which will deny the use of open top or gondola cars for the transportation of materials and supplies other than coal. It is estimated that this order will increase the coal movement 600,000 tons per week.—*Railway Review,* November 3, 1917.

In July the railways handled almost 19 per cent more ton-miles with each freight locomotive than they did in July, 1916. At the same time the number of ton-miles handled with each freight locomotive in July, 1916, was 26 per cent greater than for the same period of 1915.—*Railway Age Gazette,* November 2, 1917.

A rider attached to the bill increasing the size of the Interstate Commerce Commission, which prohibits any advance in freight rates until the reasonableness of such an advance shall have been passed upon by the commission, has halted the readjustment of rates already begun and has thrown many tariffs into a snarl that has caused glaring examples of unfair discrimination. It is expected that the rider will add several months' work to the docket of the already overburdened commission.—*Railway Age Gazette,* November 2, 1917.

New Books

The British Steam Railway Locomotive, by the late E. L. Ahrons. 391 pages, illustrated. 8½ in. by 11 in. Price 30 shillings. Published by The Locomotive Publishing Company, Ltd., 3 Amen Corner, London, Eng., and by Spon & Chamberlain, 123 Liberty street, New York. Bound in cloth.

The author of this book, who died March 30, 1926, is well known in the field of British railroad history, one of his earlier works being "The Development of British Locomotive Design." He has also written numerous railway historical articles for the British railway technical press.

This book covers the period of British locomotive development from 1825 to 1925. It contains numerous illustrations of both early and modern locomotives. The information given relative to the various important locomotive developments is unusually complete. The book is devoted to locomotive developments in Great Britain.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Estimation of Passenger Earnings on New Projects, by A. Lines. Technical Paper No. 259, Government of India Railway Board. 13 p. map. Pub. by Government of India Central Publication Branch, Calcutta, India. Available from Office of High Commissioner for India, London, England. Annas 9, or 1 shilling.

Forty-Third Report of the Railway Accounting Officers' Association. Denver Meeting, June 8, 9, 10, 1927. Contains minutes of 39th annual meeting, addresses made and reports of the several committees, membership lists. Subject index, p. 481-494. 494 p. Pub. by Railway Accounting Officers' Association, Washington, D. C. $2.00.

Proceedings of the Nineteenth Annual Convention of the International Railway Fuel Association, 1927. Railroaders, householders, students and others will find much of extraordinary interest in this volume. 476 p. illus. Published by the Association, Chicago, Ill., $3.00.

The Services of Supply, by General Johnson Hagood. A well told account of the services behind the lines in the European War in which railroaders may like the sections on transportation. 403 p. Pub. by Houghton, Mifflin, New York and Boston, $5.00.

Periodical Articles

Le Canal de Panama, by Pierre Clerget. An analysis of the effect of the Canal on economic conditions in this country, preceded by a short history. Effect on railway freight rates is discussed on pages 455-457. Revue Economique Internationale, September, 1927, p. 441-462.

A Horse Sent 6,000 Miles as a Sculptor's Model. Ashwanikumar, one of the latest of the highly distinguished and valuable animals entrusted to the care of transportation companies, who traveled safely via railroad and steamship from India to Paris. Illustrated London News, October 22, 1927, p. 704-705.

Plant Location, by Tyler Stewart Rogers. Among the factors influencing location are transportation of raw materials, distribution of finished products, and railroad siding and waterfront at sites. Mechanical Engineering, issue of November, 1927, p. 1191-1194.

What the Atom Means to Industry, by Gerald Wendt. "Then there's a process, invented at the University of Michigan, for the automatic inspection and sorting of roller bearings." p. 24 Nation's Business, November, 1927, p. 23-25.

Odds and Ends of Railroading

Lyle Hubbard of the timekeeping department of the New York Central at Toledo, Ohio, finds athletics a profitable as well as a health-giving occupation. Recently, as the result of winning a 9-mile swim in the Maumee river, against 47 competitors, Lyle was awarded a check for $1,000.

In England a court has decided that passengers in an automobile are equally responsible with the driver for violations of the traffic law. At last the back seat driver has found a friend. But such an interpretation of responsibilities might induce more careful crossing of grade crossings, if we had it here.

That "Old Dobbin" has not entirely passed out of the picture in this motorized age was demonstrated recently on the Pennsylvania. During the ultra-modern work of electrifying the Maryland division, between Wilmington, Del., and Philadelphia, Pa., horses were used in all cases in stringing the overhead wire from pole to pole.

Passenger Brakeman Dennis T. McKenna of the Boston & Maine is the latest addition to the list of railway heroes. While waiting for his train to start back from its terminal, Dennis observed a young lady fall into a lake. Despite the fact that he was in uniform, he jumped in, and being a strong swimmer, succeeded in rescuing her. McKenna served in the World War in an engineering regiment.

That exciting incidents on railways are not confined to this country is indicated by an occurrence on the Chalons line in France. Jules Chossenotte, agent at the small station of Prunay was struck and fatally injured by a train while tending the switch lamps. His 15-year-old daughter, Renee, called a neighbor to attend to her father and then worked the switches for five hours without a mistake until a substitute arrived.

The New York Central has no monopoly on railway swimming stars. Lee Barrett, an electrician employed in the coach shop of the St. Louis-San Francisco at Springfield, Mo., recently broke records by swimming the length of Lake Taneycomo, Mo., 18 miles, in 9 hr. 10 min. Barrett made his record swim merely for his own satisfaction, after having been forced out of a race held in the lake a week previously by cramps, after swimming nine miles.

What is said to be the world's tiniest public railway operates along the River Esk in Cumberland, England. This road, the Ravenglass & Eskdale, is of 15 in. gage. It was opened in 1876 and in a single day it now handles as many as 2,400 passengers, running 20 trains a day over its single track. It owns four locomotives, the largest being a 2-8-2, of one-third full size, which can pull a 30-ton freight train or a train of 220 passengers. Coke is used as fuel.

The Chicago, North Shore & Milwaukee was awarded the speed trophy of the American Electric Railway Association at the 46th annual convention of the association at Cleveland, Ohio, held on October 3 to 6. The award was made on the basis of operations during the past year, the record showing that the North Shore Line during that period operated its trains over 87.19 miles of track between Chicago and Milwaukee, Wis., at an average speed of 63.9 miles per hour, not including stops, and 41.8 miles per hour, including 14 regular schedule stops.

Teams composed of officers and employees of the Baltimore & Ohio and Southern railways played a golf match at the Columbia Country Club, Washington, D. C., on October 17, which resulted in victories for both the first and second teams of the Baltimore & Ohio. For the championship trophy the score is now even, as the Southern team won in an earlier match. The second B. & O. team was victorious on this occasion but on a combination of the scores with those of the previous match the trophy was awarded to the team from the Southern. Several of the general officers of both roads participated.

There is considerable variation in the practice of various railroads in the positions from which the official staff is chosen. On some the train service seems to be at some advantage; on others the mechanical department; on others the engineering department, and so on. On the Northwestern Pacific, on the other hand, stenography seems to have been the stepping stone to success for quite a number of positions—the comptroller, assistant to president, general freight and passenger agent, general storekeeper, chief claims investigator, and assistant superintendent all having started their railroad careers as stenographers.

An Order Fallen into Desuetude

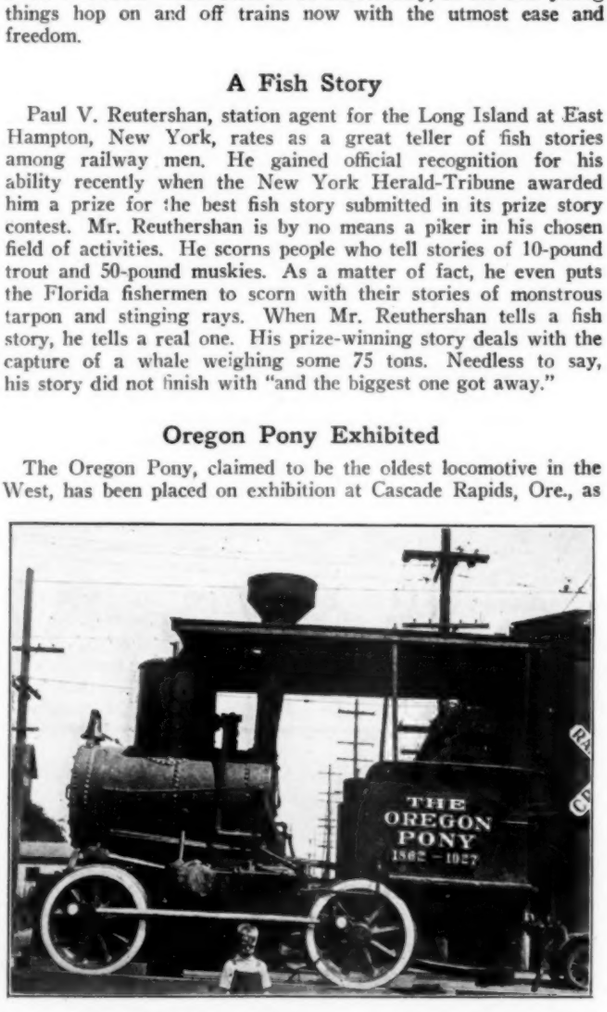
On June 8, 1903, D. W. Sanborn, then general superintendent of the Boston & Maine, issued order No. 469, as follows: "General Rule 583 is modified to the extent that you allow the young and able-bodied women passengers to step off and on cars unassisted, as the contact of the hand with the shirt-waist sleeve soils it." In these days of sleeveless waists and abbreviated skirts this order would seem to be unnecessary, as the dear young things hop on and off trains now with the utmost ease and freedom.

A Fish Story

Paul V. Reutershan, station agent for the Long Island at East Hampton, New York, rates as a great teller of fish stories among railway men. He gained official recognition for his ability recently when the New York Herald-Tribune awarded him a prize for the best fish story submitted in its prize story contest. Mr. Reuthershan is by no means a piker in his chosen field of activities. He scorns people who tell stories of 10-pound trout and 50-pound muskies. As a matter of fact, he even puts the Florida fishermen to scorn with their stories of monstrous tarpon and stinging rays. When Mr. Reuthershan tells a fish story, he tells a real one. His prize-winning story deals with the capture of a whale weighing some 75 tons. Needless to say, his story did not finish with "and the biggest one got away."

Oregon Pony Exhibited

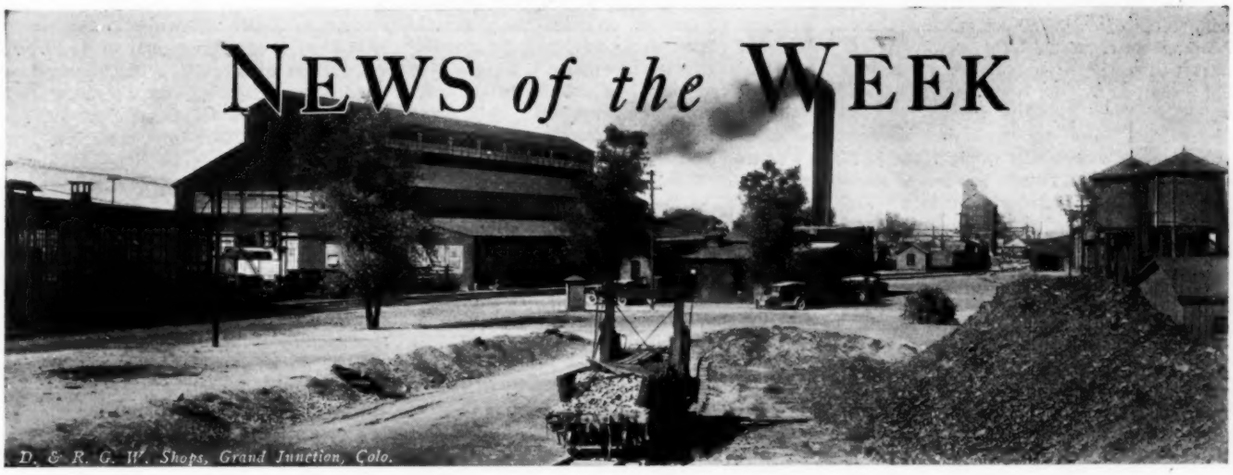
The Oregon Pony, claimed to be the oldest locomotive in the West, has been placed on exhibition at Cascade Rapids, Ore., as



One of the Oldest Locomotives in the West

shown in the accompanying illustration. This locomotive was first used in 1862 on a portage railway around the rapids of the Cascade river.

NEWS *of the* WEEK



D. & R. G. W. Shops, Grand Junction, Colo.

THE WESTERN RAILWAY CLUB will hold its next meeting on November 21, at Chicago, when a paper will be read on "The Locomotive Yardstick," by A. W. Bruce, designing engineer, American Locomotive Company.

THE NEW YORK, NEW HAVEN & HARTFORD now pays its employees by means of checks, mailed to each individual; and the pay cars, heretofore traversing the whole length of the company's lines every week have been discontinued.

THE RAILWAY CLUB OF GREENVILLE will hold its next meeting on November 15 when a film will be shown entitled, "The Romance of Power" under the courtesy of F. A. Connor, district engineer, Pennsylvania Power Company.

THE SOCIETY OF TERMINAL ENGINEERS announces that its next regular meeting will be held, not on November 8, but on *Thursday evening*, November 10, at 29 West 39th Street, New York City. Albert J. Martin and Joseph P. Ryan will speak on labor as a factor in terminal operation and design.

HEARING ON THE DEMANDS of the Brotherhood of Railroad and Steamship clerks Freight handlers and Station employees for increases in pay of 15 cents an hour on the Chicago & North Western, which were begun at Chicago on September 7 were ended on November 1. A decision is expected this week.

THE NEW ENGLAND RAILROAD CLUB will hold its regular meeting at Copley-Plaza Hotel, Boston, on Tuesday evening, November 8. The speaker will be George Hannauer, president of the Boston & Maine, who will talk on freight classification yards. Mr. Hannauer, who introduced the first car retarders in America, will illustrate his address by a motion picture.

THE AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS at its annual convention held in Chicago on October 20 and 21, elected as president F. E. Lewis, manager of dining cars and hotel department of the Union Pacific, and L. M. Jones, superintendent of sleeping and dining cars of the Chicago, Milwaukee & St. Paul, was elected secretary. Next year's meeting will be held at Havana, Cuba.

CONFIRMATION OF REPORTS which have been in circulation for several weeks that Commissioner H. C. Hall of the Interstate Commerce Commission was planning to resign before the end of the year was given at the White House on November 1. It was stated on behalf of the President that Mr. Hall had advised him by letter of his desire to be relieved, on account of his health, but that the date has not yet been set. Several candidates for the office have been under consideration by the President.

Correction

The address of the secretary, C. W. Kelly, of the National Railway Appliances Association is 1014 South Michigan Boulevard, Chicago, instead of 825 South Wabash avenue as reported in the *Railway Age* of October 29, page 860.

Canadian Railroads Extending Hotel Systems

The two Canadian railways are extending their hotel systems. Recently Sir Henry Thornton, for the Canadian National turned the first sod for the new hotel at Halifax. The same road will next year commence construction of a $5,000,000 hotel in Vancouver, and already construction work has begun on the new 28-story hotel, the cost of which will approximate $10,000,000, for the Canadian Pacific in Toronto opposite the new Union Station.

Railroad Taxes in the North-West

Fred W. Sargent, president of the Chicago & North Western, commenting on taxes in an advertisement published in newspapers along the North-Western lines, states that that road, comprising 10,064 miles, paid more taxes in 1920 than were paid by all of the railroads in the Dominion of Canada (39,148 miles) while in many localities the North Western's taxes furnish more than one-half of the funds used to support the schools. For the past five years the road's taxes have exceeded its cash dividends by $1,500,000 each year. The taxes this year will approximate $10,000,000, which is double the amount paid in 1916 and eight times the aggregate taxes paid in 1900.

Sir Henry Thornton to Study Mexican Railways

In compliance with a request addressed by the government of Mexico to the government of Canada, Sir Henry Thornton, president of the Canadian National, will go to Mexico to make an extensive survey of the National Railways of Mexico. Following this survey Sir Henry will report to the Mexican government his opinions as to methods for improving the efficiency of the lines. It is expected that Sir Henry will be in Mexico throughout the month of November making this study and report.

Western Trainmen Renew Wage Increase Request

A request for an increase in wages which is a renewal of the request denied by an arbitration board in June was filed with 55 railroads in western territory by the Brotherhood of Railroad Trainmen and the Order of Railway Conductors on November 1.

The request suggests an increase in daily wage rates ranging from about 8½ per cent or approximately 50 cents for men in yard service to about 19 per cent or one dollar for men in passenger and freight service. The arbitration board, in denying the earlier demand for an increase of one dollar per day for men in passenger and freight service, granted a 7½ per cent increase to yard men retroactive to March 1. The present wage agreement ends March 1, 1928, and the new demands, if granted, will be effective on that date.

A reply to the request by December 1 was asked by the brotherhoods. The employees ask the following minimum wage rates for passenger service: Conductors, $7.75 per day or $232.50 per month; assistant conductors $6.84 per day or $205.20 per month; baggagemen, ranging from $7.18 to $6.16 per day or from $215.40 to $184.80 per month; flagmen and brake-

men, $6 per day or $180 per month. Under the schedule requested local or way freight rates will be $7.74 per day for conductors and $6.24 per day for brakemen. Through freight rates will be $7.34 per day for conductors and $5.84 per day for brakemen. Yard service wages will range from $5.72 cents per day for switch tenders to $8.44 per day for car retarder operators. The employees ask that mountain, desert and other differentials remain as at present.

Lectures on Locomotive Engineering at Purdue

A series of lectures on locomotive engineering by Alphonse I. Lipetz, consulting engineer, American Locomotive Company, and non-resident professor, locomotive engineering, Purdue University, will be conducted at that institution November 7 to 11, inclusive, the latter date coinciding with that of the American Railway Association inspection of the air brake and draft gear tests. The morning lectures are for student and staff members, but most of those in the afternoon or evening are open to railway employees and the public. The following are the subjects of the public lectures:

Railroad Conditions in Europe	7:30 p. m., Monday
Locomotive Types ..	4:00 p. m., Tuesday
Attempts to Increase the Power and Efficiency of the Steam Locomotive	7:30 p. m., Thursday
European and American Trends in Locomotive Design and Operation ...	4:00 p. m., Friday

Freight Operating Average for Eight Months

The Interstate Commerce Commission, Bureau of Statistics, has issued a comparison of selected items of freight service operating averages for Class I railways for eight months of each year, 1920 to 1927, by regions and for the roads as a whole, similar to that issued for the seven-months' period published in the issue of October 22, page 783. As in the case of the seven-months' figures, the best record of the comparative period was made in eight of the ten selected items in 1927, while as to average carload and percentage of loaded to total car-miles, the best record was made in 1920. Also, as was the case in the comparison of July, 1927, with July, 1926, the figures for August, 1927, showed an improvement as compared with those for August, 1926, only in four of the selected items, gross trainload, gross ton-miles per train-hour, cars per train, and pounds of coal per 1,000 gross ton-miles. As to the items of traffic density, net trainload, net ton-miles per car-day, car-miles per car-day, and per cent of loaded car-miles, the better record was made in August, 1926.

The New England region showed the best record for the comparative eight-months period as to eight items, the Great Lakes region as to five items, the Central Eastern region as to six items, the Pocahontas region as to all ten of the items, the Southern region as to seven, the Northwestern region as to five, the Central Western region as to five, and the Southwestern region as to eight.

The New England, Pocahontas and Southwestern regions were the only ones to show a record movement for the period, as to traffic density for 1927.

New Steamships for the Canadian West Indies Service

The Canadian National (West Indies) Steamships, Ltd., has been organized to operate steamships between Canadian ports and the West Indies. Contracts for the construction of three oil-burning steamships for passenger and cargo service have been let and these with four freight carriers of the Canadian Government Merchant Marine fleet will provide fortnightly passenger, freight and mail service between Canada and West Indies ports. Pending the completion of the passenger steamships now under way at the yards of Cammell Laird & Co., Ltd., Birkenhead, England, two converted ships of the C.G.M.M., the Canadian Skirmisher and Canadian Pathfinder, are maintaining fortnightly service together with the necessary Canadian Government Merchant Marine freighters. The specifications of the new ships call for high-class passenger and freight boats with a length overall of 438 ft., and gross deadweight of about 6,400 tons. They are to be equipped with twin screw, single geared turbines, oil fired.

Canadian Roads' Earnings Decline

Adverse harvesting weather in Western Canada had a serious effect upon the earnings of the two principal Canadian railways for September, both the Canadian Pacific and the Canadian National showing reductions in earnings.

It was the fifth consecutive decline in monthly net earnings and the sixth of the year for the Canadian Pacific. It was also by far the greatest decrease, being nearly equal to the five other declines recorded and leaving the road over four millions below the 1926 record for the first three-quarters.

Following are the gross earnings, working expenses and net for September, and for the first nine months with comparisons:

	September 1927	September 1926
Gross	$17,053,124	$18,875,404
Exp.	12,559,112	12,426,580
Net	$4,494,011	$6,448,823
Nine months—		
Gross	$139,183,035	$137,331,784
Exp.	114,687,789	108,699,763
Net	$24,495,245	$28,632,021

The statement of earnings and expenses for the month of September, issued by the Canadian National Railways shows gross earnings of $22,125,397, while in September, 1926, the earnings amounted to $22,619,873, a decrease of $494,476 for the month just passed. This is equivalent to a reduction of 2.19 per cent.

Working expenses for September last showed a small decrease, being $17,103,870 as against $17,111,900 in September, 1926, a decrease of $8,030.56, equal to 0.05 per a reduction of $486,446 or 8.83 per cent.

The net earnings for September last amount to $5,021,526, while in September, 1926, they reached the total of $5,507,972, a reduction of $486,446 or 8.83 per cent.

These results bring the operating ratio to 77.30 per cent for September, 1927, as compared with 75.65 for September, 1926.

The gross earnings for the nine months' period terminating September 30 last were greater by $4,107,736, or 2.16 per cent, than the gross earnings of the similar nine months' period of 1926.

In the first nine months of this year the gross earnings total $194,526,889, which compare with $190,419,152 during the first nine months of 1926.

The working expenses for the nine months of 1927 reached a total of $168,873,294, as compared with a total for the first nine months of 1926 of $161,861,304.60, an increase of $7,011,989 during the current year.

The net earnings for the nine months' period of 1927 total $25,653,594, while in the nine months' period of 1926 they were $28,557,848, a decrease of $2,904,253.

Net Income for September 5.11 Per Cent

The net railway operating income of the Class I railroads in September amounted to $132,770,069, which, for that month, was at the annual rate of return of 5.11 per cent on their property investment, according to a compilation by the Bureau of Railway Economics and made public today. In September, 1926, the net railway operating income was $145,763,441, or 5.76 per cent.

Operating revenues for the month amounted to $565,090,904, compared with $591,239,836 in September, 1926, or a decrease of 4.4 per cent. Operating expenses totaled $386,388,010, a decrease of 3.1 per cent. Class I railroads in September paid $35,562,698 in taxes. This brought their total tax bill for nine months in 1927 to $288,364,848, a decrease of $4,022,134 or 1.4 per cent as compared with the corresponding period in 1926.

Eleven Class I railroads operated at a loss in September, of which six were in the Eastern district, one in the Southern and four in the Western.

For the nine months the net railway operating income was $808,304,350, at the rate of 4.61 per cent, as compared with $891,417,514, or 5.22 per cent, in the corresponding period of last year.

Operating revenues for nine months amounted to $4,654,873,475, a decrease of 2.3 per cent. Operating expenses totaled $3,472,756,316, against $3,500,006,044 for the corresponding period the year before.

Net railway operating income by districts for the first nine months, with the percentage of return based on property investment on an annual basis, was as follows:

New England Region.....	$32,675,548	4.84%
Great Lakes Region.....	146,989,959	4.84%
Central Eastern Region...	183,213,647	4.90%
Pocahontas Region	64,137,749	8.43%
Total Eastern District..	427,016,903	5.20%
Total Southern District.	104,363,089	4.76%
Northwestern Region	78,124,682	3.37%
Central Western Region...	136,119,055	4.13%
Southwestern Region	62,680,621	4.14%
Total Western District.	276,924,358	3.89%
United States	808,304,350	4.61%

The rate of return on property investment for the five years ending with the

month of September, 1927, has averaged 4.65 per cent. Class I railroads in the Eastern district for nine months had a net of $427,016,903, at the rate of 5.20 per cent on their property investment. For the same period in 1926, their net was $456,470,257 or 5.71 per cent. Operating revenues in the Eastern District totaled $2,344,297,080, a decrease of 2 per cent, while operating expenses totaled $1,740,244,037, a decrease of 1.1 per cent. For the month of September they had a net of $59,340,834, compared with $67,569,359 in September, 1926.

In the Southern District for the nine months the net was $104,363,089, at the rate of 4.76 per cent, as compared with $121,096,131, or 5.82 per cent. Operating revenues amounted to $614,550,172, a decrease of 6.5 per cent, while operating expenses totaled $466,357,184, a decrease of 4 per cent. The net in September amounted to $14,193,023 while in the same month in 1926 it was $15,084,904.

Class I railroads in the Western District for the nine months had a net of $276,924,358, at the rate of 3.89 per cent, as compared with $313,851,126, or 4.48 per cent. Operating revenues amounted to $1,696,026,223, a decrease of 1.1 per cent, while operating expenses totaled $1,266,155,095, an increase of 1 per cent. For September, the net of the Class I railroads in the Western district amounted to $59,236,212. The net railway operating income of the same roads in September, 1926, totaled $63,109,178.

Class I Railroads—United States

Month of September	1927	1926
Total operating revenues	$565,090,904	$591,239,836
Total operating expenses	386,388,010	398,762,376
Taxes	35,562,698	37,222,596
Net railway operating income	132,770,069	145,763,441
Operating ratio—per cent	68.38	67.45
Rate of return on property investment	5.11%	5.76%
Nine Months Ended September 30		
Total operating revenues	$4,654,873,475	$4,764,635,482
Total operating expenses	3,472,756,316	3,500,006,044
Taxes	288,364,848	292,386,982
Net railway operating income	808,304,350	891,417,514
Operating ratio—per cent	74.60	73.46
Rate of return on property investment	4.61%	5.22%

Duty at Crossing to Stop and Look as Well as Listen

A "standard of conduct" for motorists and others crossing railroad tracks was laid down by the Supreme Court of the United States on October 31, in reversing the judgment of a lower court against the Baltimore & Ohio in favor of the estate of a man killed by a train at a crossing.

"When a man goes upon a railroad track," the opinion, by Justice Holmes, said, "he knows that he goes to a place where he will be killed if a train comes upon him before he is clear of the track. He knows that he must stop for the train, not the train stop for him. In such circumstances it seems to us that if a driver cannot be sure otherwise whether a train is dangerously near he must stop and get out of his vehicle, although obviously he will not often be required to do more than to stop and look. It seems to us that if he relies upon not hearing the train or any signal and takes no further precaution he does so at his own risk. If at the last moment Goodman found himself in an emergency it was his own fault that he did not reduce his speed earlier or come to a stop. It is true, as said in Flannelly v. D. & H., 225 U. S. 597,603, that the question of due care very generally is left to the jury. But we are dealing with a standard of conduct, and when the standard is clear it should be laid down once for all by the courts."

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

Air Brake Association.—T. L. Burton, 165 Broadway, New York City. Annual convention, May 5-8, 1928, Detroit, Mich. Exhibit by Air Brake Appliance Association.

Air Brake Appliance Association.—Charles R. Busch, Buffalo Brake Beam Co., 32 Nassau St., New York. Meets with Air Brake Association.

American Association of Freight Traffic Officers.—J. D. Gowin, 112 W. Adams St., Chicago.

American Association of General Baggage Agents.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

American Association of Passenger Traffic Officers.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

American Association of Railroad Superintendents.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June 12-15, 1928, Memphis, Tenn.

American Association of Superintendents of Dining Cars.—C. E. Bell, Seaboard Air Line, Washington, D. C.

American Electric Railway Association.—J. W. Welsh, 292 Madison Ave., New York.

American Railroad Master Tinners' Coppersmiths' and Pipe Fitters' Association.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill.

American Railway Association.—H. J. Forster 30 Vesey St., New York, N. Y.

Division I.—Operating—J. C. Caviston, 30 Vesey St., New York.

Freight Station Section (including former activities of American Association of Freight Agents)—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., N. Y.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association)—J. C. Caviston, 30 Vesey St., New York.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, May 16 and 17, 1928, Buffalo, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents)—W. A. Fairbanks, 30 Vesey St., New York.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual meeting, March 6-8, 1928, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electrical Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York. Annual meeting, March 5 and 6, 1928, Stevens Hotel, Chicago.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 13-20, 1928, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims, (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 5-8, 1928, Detroit, Mich.

Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

American Railroad Bridge and Building Association.—C. A. Lichty, C. & N. W., Ry., 319 N. Waller Ave., Chicago. Annual convention, 1928, Boston. Exhibit by Bridge and Building Supply Men's Association.

American Railway Development Association.—M. C. Burton, General Industrial Agent, A. T. & S. F., Topeka, Kan. Semi-annual meeting, Dec. 1 and 2, 1927, Chicago. Annual convention, 1928, Miami, Fla.

American Railway Engineering Association.—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 6-8, 1928, Chicago. Exhibit by National Railway Appliances Association.

American Railway Tool Foremen's Association.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: E. H. Lunde, Federal Machinery Sales Co., Chicago.

American Short Line Railroad Association.—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C. Next meeting, December 8-9, 1927, New Willard Hotel, Washington, D. C.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York. Annual meeting, December 5-8, 29 W. 39th St.

American Wood Preservers' Association.—E. J. Stocking, 111 West Washington St., Chicago. Next annual convention, Jan. 24-26, 1928, Montreal, Que.

Association of Railway Claim Agents.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting, June, 1928, Omaha, Neb.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

Association of Railway Executives.—Stanley J. Strong, 17th and H. Sts., N. W., Washington, D. C.

Association of Railway Supply Men.—C. O. Jenista, Barco Mfg. Co., 1801 Winnemac Ave., Chicago. Meets with International Railway General Foremen's Association.

Bridge and Building Supply Men's Association.—W. D. Waugh, Detroit Graphite Co., St. Louis, Mo. Annual exhibit at convention of American Railway Bridge and Building Association.

Canadian Railway Club.—C. R. Crook, 129 Charron St., Montreal, Que.

Car Foremen's Association of Chicago.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

Car Foremen's Association of Los Angeles.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

Car Foremen's Association of St. Louis, Mo.—R. E. Giger, 731 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

Central Railway Club.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

Chief Interchange Car Inspectors' and Car Foremen's Association.—(See Railway Car Department Officers' Association.)

Cincinnati Railway Club.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

Cleveland Railway Club.—F. L. Fredricks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

International Railroad Master Blacksmiths' Association.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual convention, 1928, Chicago. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

International Railroad Master Blacksmiths' Supply Men's Association.—W. R. Walsh, Ewald Iron Co., Louisville, Ky.

International Railroad Fuel Association.—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention, May 7-11, 1928, Chicago. Exhibit by International Railway Supply Men's Association.

International Railway General Foremen's Association.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—W. J. Dickinson, 189 W. Madison St., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May, 1928, Cleveland, O.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next annual convention, April 24-26, 1928, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Annual convention, September, 1928, Glacier National Park, Mont.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention, March 5-8, 1928, Coliseum, Chicago.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: C. F. Larson, supt. of safety, Missouri Pacific, St. Louis, Mo.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2nd Thursday, in month, alternately in San Francisco and Oakland.

RAILROAD MOTOR TRANSPORT CONFERENCE.—R. H. Newcomb, 492 South Station, Boston, Mass.

RAILWAY ACCOUNTING OFFICERS ASSOCIATION.—E. R. Woodson, 116 Woodward Building, Washington, D. C. Next convention, May 1-4, 1928, Atlanta, Ga.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November 16, 1927, Hotel Commodore, N. Y.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Supply Men's Association.—B. S. Johnson, W. H. Miner, Inc., 209 S. La Salle St., Chicago.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, 208 W. Washington St., Chicago.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION. J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, A. R. A.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

TRACK SUPPLY ASSOCIATION.—A. H. Todd, Positive Rail Anchor Co., 80 E. Jackson Bl'v'd., Chicago. Meets with Roadmasters' and Maintainance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—J. W. Fogg (treasurer), vice-pres. of MacLean-Fogg Lock-Nut Co., 2649 N. Kildare Ave., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Foreign Railways

Competition of motor buses in transportation of parties to football games, races and other sporting events is blamed by the Belgian Railway Administration for the fall in passenger traffic below budgeted figures, according to reports to the Department of Commerce. The railroads are starting an extensive campaign to obtain this type of business. As a first step they have arranged with the federation of football societies to grant reductions to members of football clubs who follow their teams on out-of-town engagements.

260 Persons Killed in Jugoslavia

According to a press dispatch from London, on October 26, 260 persons were reported to have been killed when a passenger train fell over a precipice on the line between Sarajevo and Mostar, Jugoslavia. The line is of narrow gage with rack rail sections traversing an extremely mountainous country.

Norwegian Railways' Earnings Decrease

Operating receipts of the Norwegian State Railways for the fiscal year ending June 30, 1927, amounted to approximately $22,000,000 and expenditures totaled about $21,715,000, leaving a profit of $285,000, according to a statement recently made public and reported to the United States Department of Commerce. This was a drop from the profit of the previous fiscal year, 1926, which totaled about $975,000. Profit for the year before, 1925, totaled about $2,375,000. Part of the decline in profit is ascribed to a reduction in freight and passenger rates.

Danish State Railways Reduce Deficit

The 1926-27 statement of the Danish State Railways reveals less of a deficit for this year—about $5,600,000 compared with $7,300,000 the previous year. The somewhat better financial result during 1926-27 is reported due to a reduction in operating expenses which was approximately $4,050,000 and a smaller decrease in operating revenues, approximately $2,325,000. The reduction in operating expenses is due chiefly to the reduction in wages and fuel for the locomotives, ferries and ships operated by the State Railways. Fuel prices have been considerably lower than the preceding late years. The ever-increasing number of privately owned motor cars, more than the increase in motor bus traffic, is said to be the chief cause of the heavy decline in passenger traffic.

Equipment and Supplies

Locomotives

THE GEORGIA NORTHERN is inquiring for one locomotive.

Freight Cars

THE CHICAGO & NORTH WESTERN is inquiring for 100 caboose car underframes.

THE FRUIT GROWERS EXPRESS is inquiring for 600 underframes for refrigerator cars.

THE NATIONAL RAILWAYS OF MEXICO are inquiring for 20 tanks cars of 6,500 gallon capacity.

THE WHEELING STEEL COMPANY has ordered 10 extension side dump cars of 30 cu. yd. capacity, from the Clark Car Company.

Passenger Cars

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 10 steel baggage car bodies 72 ft. 9 in. long, from the American Car & Foundry Company. Inquiry for ten baggage cars was reported in the *Railway Age* of October 15.

Iron and Steel

THE BOSTON & MAINE has ordered 10,000 tons of rail from the Bethlehem Steel Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 28,500 tons of rails from the Illinois Steel Company, 13,500 tons from the Inland Steel Company and 18,300 tons from the Colorado Fuel & Iron Company.

Machinery and Tools

THE CENTRAL VERMONT has ordered a 15-ton, 46 ft. span crane, from the Niles-Bement-Pond Company.

Signaling

THE NEW YORK RAPID TRANSIT CORPORATION (New York city Subways) has contracted with the General Railway Signal Company for the installation of automatic block signals on its 14th Street line from Grand Street to East New York; and for an electric interlocking, sixteen levers.

Supply Trade

E. R. Kennedy has been appointed assistant general manager of sales of the **Trumbull Steel Company,** Warren, O.

The Waugh Equipment Company has removed its New York City office from 100 East Forty-second street to 420 Lexington avenue.

M. J. Evans, formerly sales manager of the **Republic Flow Meters Company,** Chicago, has been appointed sales manager of the **Whiting Corporation,** Harvey, Ill.

E. N. Stevens, representative of the **Imperial Brass Manufacturing Company,** Chicago, has resigned to become assistant sales manager of the Welding Division of the **Bastian-Blessing Company,** Chicago.

Joseph T. Ryerson & Son, Inc., Chicago, recently took over the distribution of the Foote-Burt line of drills to the railroads. Foote-Burt equipment includes machines for single and multiple spindle drilling for a great variety of work such as mud rings, flue sheets, etc.

William S. Miller, who has been appointed manager of railroad sales for the **Northwest Engineering Company,** Chicago, was born in San Francisco, Cal., on May 17, 1888, and graduated from Leland Stanford University in 1911. He then entered the employ of Stone & Webster as a rodman and instrumentman on hydro-electric construction in Washington. In 1912 he was appointed

W. S. Miller

sales manager of the Senn-Smith Company, manufacturers of mining equipment, which position he held until 1917 when he was appointed district manager of the Lakewood Engineering Company. Later he was appointed eastern sales manager. In 1924, he undertook special engineering investigations and in 1925 was appointed manager of the railroad equipment department of the Parsons Company at Newton, Iowa, which position he held until his recent appointment.

Charles M. Schwab, chairman of the board of the Bethlehem Steel Corporation, has been elected president of the **American Iron & Steel Institute** to succeed the late Elbert H. Gary; **James A. Farrell,** president of the United States Steel Corporation, has been elected vice-president of the Institute, and **Eugene J. Buffington,** president of the Illinois Steel Company, has been elected a director.

Obituary

Norman Spear Lawrence, vice-president and director of sales of the Whiting Corporation, Harvey, Ill., died on October 26 after a brief attack of pneumonia. Mr. Lawrence was born on May 9, 1882, at Chicago, and was educated in the schools of his native city. He graduated from Cornell University in the class of 1904 as a mechanical engineer, and

N. S. Lawrence

shortly after entered the employ of Whiting Corporation, as an estimator, becoming successively chief estimator, assistant sales manager, vice-president and director of sales. During the past few years Mr. Lawrence was also president of the Swenson Evaporator Company, a subsidiary of Whiting Corporation.

R. Spurrier Howard-Smith, formerly for many years previous to 1906, treasurer of the Link Belt Company, died on October 29 while playing golf at the Philadelphia Cricket Club, at the age of 77.

W. Marshall Page, vice-president in charge of sales of the Copperweld Steel Company, Rankin, Pa., died suddenly on October 25 at Pittsburgh, Pa. He graduated from Columbia University and during the World War was a member of the Engineer Corps and the Chemical Warfare Division, retiring from service at the close of the war as a major with a distinguished service award. At this time he entered the employ of the Copperweld Steel Company and in 1925 was promoted to vice-president and a member of the board of directors.

Harry L. Brown, secretary of the Ohio Brass Company, Mansfield, Ohio, died suddenly on October 23 following an operation for acute appendicitis. Mr. Brown joined the Ohio Brass Company

H. L. Brown

early in 1925. He was born at Grand Rapids, Mich., in 1889, and graduated from the University of Michigan in electrical engineering. He engaged in engineering work with the Aurora, Elgin & Chicago and the Chicago Telephone Company for two years before entering the field of technical journalism. He was associated with the McGraw-Hill Publishing Company during a period of ten years. In 1915 he was assistant editor of the Electrical World in Chicago, and was transferred the following year to the position of western editorial representative of the Electric Railway Journal and subsequently was made western editor. In April, 1922, he went to New York to become managing editor of the Electric Railway Journal and in less than a year was made co-editor with Henry W. Blake and placed in executive charge. During the World War he served as first lieutenant and captain in the Signal Corps.

Nathaniel W. Sample, Sr., for many years connected with the Baldwin Locomotive Works, died suddenly at his home in Philadelphia, Pa., on October 27. Mr. Sample was in his eighty-fourth year at the time of his death. From 1871 to 1876 Mr. Sample was consecutively machinist and foreman of shops of the Denver & Rio Grande (now the Denver & Rio Grande Western), and then until 1886 served as master mechanic. From 1886 to 1891, he was superintendent of machinery and from the latter time until September, 1900, was general superintendent of the same road, later serving as consulting engineer of the Rio Grande Western (part of the Denver & Rio Grande Western). Since 1900, among other duties, he had charge of apprentices in the shops of the Baldwin Locomotive Works.

Construction

BALTIMORE & OHIO.—A contract has been let to the Vang Construction Company of Cumberland, Md., for the construction of concrete piers of bridge No. 47 over the Miami river and Erie canal at Woodsdale, O. This project is to cost $100,000.

CENTRAL OF GEORGIA.—A contract has been let to Hugger Brothers Construction Company of Montgomery, Ala., for the construction of a station at Thomaston, Ga. which will cost $30,000.

ERIE.—This company plans the elimination of a grade crossing on its line at Hilburn Road in Suffern, N. Y., at an estimated cost of $200,000.

NEW YORK CENTRAL.—This road has plans under consideration for the elimination of nine grade crossings on its line in Westchester County, New York, at an estimated cost of $2,300,000. This road plans, also, the construction of a steel bridge on its line at Buffalo, N. Y.

NEW YORK CENTRAL.—Wm. M. Ballard, Inc., of Syracuse, N. Y., has been let a contract for alterations and additions to freight houses at Syracuse and Rochester, N. Y. A contract has also been awarded to Manning, Maxwell & Moore, Inc., of New York City for installing two 50-ton cranes for the electric shops at Harmon, N. Y.

NORFOLK & WESTERN.—A new railroad yard containing approximately 14 miles of track, new track scales, water service facilities and yard offices, will be constructed by this company in the immediate future on the property acquired several months ago just north of Winston-Salem. The main line of the railway through Winston-Salem will also be double tracked from Fourth street to Liberty street, and from Fourteenth street to Oakland street. The latter improvement, plans for which are not yet completed, will involve the addition of approximately one mile of second track through the heart of the city's industrial section. It is estimated that the cost of these additions to the railway's facilities at Winston-Salem will be approximately $800,000. The new yard just north of the city limits and adjoining the present Norfolk & Western right-of-way will contain 13 yard tracks each with a capacity of from 70 to 90 cars; two car repair tracks; one wye track and one running track, the total track mileage being approximately 14 miles. The yard will also contain a 50,000-gallon water tank, standpipe and other water service facilities; a 200-ton track scale and a yard office, all of which will be located at the south end of the yard. Flood lights similar to those recently placed in operation in the present Norfolk & Western yard at Winston-Salem will be installed at the new yard. Efforts will also be made by the railway to eliminate the grade crossing at the north end of the new yard where the state highway passes over the present Norfolk & Western right-of-way. The new yard, when completed, will be approximately one mile long.

NORTHERN PACIFIC.—The awarding of a contract for the construction of water treating plants at 24 points on the lines of the Northern Pacific in western North Dakota and eastern Montana to E. J. Dunnigan, St. Paul, Minn., was erroneously attributed to the Great Northern in the *Railway Age* of October 22, page 795.

PENNSYLVANIA. — The Pittsburgh-Des Moines Steel Company of Pittsburgh, Pa., has been awarded a contract for the erection of a 100,000-gal. steel water tank in connection with a sprinkler system on Pier K at Jersey City, N. J. A contract has also been awarded to Sinclair & Grigg of Philadelphia, Pa., for the construction of an office building and the enlargement of a restaurant in the new perishable products terminal at Philadelphia at a cost of $30,000.

QUANAH, ACME & PACIFIC.—This company plans the construction of a brick and stucco station at Floydada, Tex., as a part of the program of new line construction between McBain, Tex., and Floydada, which was started on June 15.

ST. LOUIS SOUTHWESTERN.—This company has purchased a tract of 110 acres of land at Jonesboro, Ark., for the purpose of constructing a yard at that point at some time in the future.

To Start Hudson Bay Extension

On the recommendation of Honorable Charles A. Dunning, Minister of Railways and Canals at Ottawa, the Federal Government has awarded to Stewart & Cameron Ltd., of Winnipeg, the contract for the grading of the proposed extension of the Hudson Bay Railway from Mile 356 of the present line to Fort Churchill which was recently chosen as the ocean terminus of the new road. The length of the line is approximately 154 miles, and the cost of grading estimated at $1,250,000.

The supervision of the work will be placed under the Canadian National, as agents for the Crown, and when the grade is ready the work of laying the steel and building the necessary structures will be carried out by the Canadian National forces.

FLOOD CONTROL BY THE GOVERNMENT with the stipulation that Congress should concern itself only with control and not the related problems of drainage, etc., was the gist of a resolution adopted by the American Railway Magazine Editors' Association at its semi-annual meeting at New Orleans, La., on October 28 and 29. The practice of disseminating flood control information through railroad magazines and the problems of the magazine editor in preparing his publication were discussed at the meeting. John M. Parker, former governor of Tennessee, reviewed the recent flood and paid tribute to the railroads for their assistance in carrying people and animals out of the flooded section.

Financial

ALABAMA GREAT SOUTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue a 60-day promissory note for $5,200,000 to J. P. Morgan & Co., dated December 1, at not to exceed 4¾ per cent, and also to issue later $5,206,000 of its first consolidated mortgage bonds. The proceeds of the note are to be used to pay in part $5,206,890 of first mortgage and general mortgage bonds maturing on December 1, and it is proposed to issue the bonds on or about February 1 to pay the note. The postponement of the sale of the bonds is desirable, the application says, for the reason that if the company earns gross revenue of not less than $10,000,000 for 1927 (its present estimate is $10,300,000) the bonds will become a legal investment for savings banks and the price at which they can be sold will be at least three points higher. It is expected they can be sold on February 1 at not less than 95½.

BOSTON & MAINE.—*Mr. Loring to Retire.*—Chairman Homer Loring of the Boston & Maine has announced that application would be made in the near future to list the common stock on the New York Stock Exchange.

Mr. Loring stated also that he considered his work with the road about completed and that he hoped to be able to finish some pending matters and retire in January.

CHESAPEAKE & OHIO.—*Merger Application Argued before I. C. C.*—The application of this company for authority to acquire stock control of the Erie and Pere Marquette, and to issue approximately $59,000,000 of common stock at par was finally submitted to the Interstate Commerce Commission for decision on November 2 after two days of oral argument before eight members of the commission. Commissioners Brainerd, Meyer and Woodlock were not present. Counsel for the applicant, Herbert Fitzpatrick and Granville Curry, argued that the plan is in the public interest and also in the interest of the three carriers as a logical combination into a system able to compete with the Baltimore & Ohio, New York Central and Pennsylvania. Counsel for the minority stockholders of the C. & O., Henry W. Anderson and Thomas B. Gay, opposed the plan as an incongruous combination of railroads and as representing a great speculative enterprise on the part of the Van Sweringens and their associates to use the assets of the railroad companies to acquire stocks which they would control. They also contended that the Van Sweringens would derive undue profits from the transactions. In conclusion Mr. Anderson asked the commisson to order an investigation of the financial transactions of the Van Sweringens. Moultrie Hitt appeared on behalf of a number of short lines connecting with the lines involved and took the position that the applicant has not made a proper showing that its plan is in the public interest be-

cause it has not made provision for the inclusion of the short lines. Mr. Fitzpatrick pointed out that no state, municipality or civic club has appeared in protest against the plan.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of $40,000,000 secured 4½ per cent bonds, to be sold at not less than 92½ and accrued interest, the proceeds to be used to retire outstanding notes aggregating $28,862,000 and to reimburse the treasury for additions and betterments. The company also was authorized to pledge $45,000,000 of first and refunding mortgage bonds as collateral security.

CHICAGO, ROCK ISLAND & PACIFIC.—*Abandonment of Trackage Rights.*—The Interstate Commerce Commission has dismissed for want of jurisdiction an application of this company for authority to abandon the right to use the line of the Denver & Rio Grande Western between Denver and Pueblo as distinguished from its operation over that railroad. The commission further finds that present and future public convenience and necessity do not permit the abandonment by the Rock Island of the use and operation of the terminal facilities of the Denver & Rio Grande Western at Denver and Colorado Springs. This part of the application is denied without prejudice for resubmission when the Rock Island provides itself with other suitable terminal facilities, reasonably sufficient to handle its present and prospective traffic at Denver and Colorado Springs.

The Rock Island formerly operated into Denver via Colorado Springs and over the line of the Denver & Rio Grande Western. In 1899 it made an arrangement with the Union Pacific to use the latter's line into Denver from Limon but has since continued to use the Denver's terminal facilities at both Colorado Springs and Denver. Rock Island operations into Pueblo were discontinued in 1918, or like the operation between Colorado Springs and Denver prior to the passage of the Transportation Act.

DELAWARE, LACKAWANNA & WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability, as guarantor, in respect of $9,871,000 of Morris & Essex first refunding mortgage 3½ per cent bonds and to sell them at not less than 83½.

GREAT NORTHERN PACIFIC.—*Merger Hearings.*—The question of whether the proposed consolidation of the Great Northern and the Northern Pacific is calculated to benefit the public was injected into the hearing before representatives of the Interstate Commerce Commission at Minneapolis on October 26, when Charles D. Mahaffie, director of the bureau of finance, asked the roads to establish a connection between the public interest of the people of the Northwest and the financial savings which witnesses had been describing. The testimony during the first part of the hearing, which opened on October 24, dealt with the proposed economies that will be effected in the joint operation of trains, terminals and shops and the consolidation of clerical forces.

F. E. Williamson, vice-president in charge of operations of the Northern Pacific, estimated an annual saving of $3,000,000 through the consolidation of terminals. Many common points, he said, are served by the two roads and the union of terminals and some incidental rearrangement of service and abandonment of trackage will save this amount. J. R. W. Davis, chief engineer of the Great Northern, said that the rerouting of gravel from all beds now owned by the two roads will make possible an annual saving of $20,409 while $6,900 will be saved annually in the handling of ties.

On the fifth day the testimony regarding economies was interrupted by a discussion of the short lines that are intervening and which are held to play an important part in the merger. H. K. Dougan, assistant general auditor of the Great Northern, testified as to the earning ability of the short lines, stating that of the nine roads considered, only three have been able to show average yearly operating profits during the six years from 1921 to 1926 and that the prospects of these lines improving their situations in the future were limited.

V. P. Turnburke, general auditor of the Great Northern, testified that a saving of $1,482,194 will be made possible by the diversion of freight traffic from one line to the other to take advantage of short routes and low grades between the northwest points which they serve in common. Another saving amounting to $2,282,157 will result from the substitution of inexpensive Montana coal produced by the Northwestern Improvement Company, owned by the Northern Pacific, for the higher priced coal and oil now used by the Great Northern on its lines in Montana and western North Dakota.

The diversion of traffic from several divisions on the Great Northern to the Northern Pacific will permit a saving of $765,494 in the cost of train handling. On the other hand, the rerouting of traffic to the Great Northern from seven divisions of the Northern Pacific where the mileage is longer or the grades are heavier will permit a saving of $716,000 in operating expenses.

Several witnesses testified that the joint use of terminals will save $678,458 at St. Paul, and Minneapolis, Minn.; $117,241 at Moorhead, Minn., and Fargo, N. D.; $64,859 at Helena, Mont,; $84,000 at Butte, Mont.; $300,546 at Spokane, Wash.; $55,292 at Tacoma and $100,597 at Portland, Ore. The savings will be brought about by a reduction in terminal and station forces; the abandonment and joint use of facilities and a reduction in switching service. In addition to economies in the operation of terminals, which will amount to $1,887,607, other savings will be effected by the abandonment of track at various points where the present arrangement entails duplicate operation. These include the reorganization of train service north of Seattle, at a saving of $112,829; the abandonment of the Bellingham branch at a saving of $48,888 and the abandonment of track between Abbotsford, Wash., and Cloverdale at a saving of $48,086.

H. E. Jones, assistant division superintendent of the Great Northern at Minneapolis, Minn., showed that the consolidation would result in a reduction in yardmasters at the Twin Cities with a saving of $19,119; terminal yard clerical forces, $30,365; yard and transfer engine operation, $429,700; freight house operation, $80,277; St. Paul coach yard operation, $69,807; car repair forces, $37,632 and the elimination of interlocking plants at junctions of the Northern Pacific and the Great Northern, $11,558. The merged railroad would be able to handle all terminal freight and passenger business with 85 locomotives, while the Northern Pacific at present operates 53 and the Great Northern 57.

Silas Zwight, general mechanical superintendent of the Northern Pacific, said that the roads propose to close several shops and transfer the work to others. The Great Northern locomotive shops at Dale street and the Northern Pacific shops at Como avenue in St. Paul will be closed and the work now done in these s will be transferred to the Jackson street and Mississippi street shops, to the Northern Pacific shops at Brainerd, Minn., and to the Great Northern shops at Fridley. The discontinuance of work in the Como shops will decrease expenditures by $865,462, of which $815,089 is payroll reduction, while the discontinuance of work in the Dale street shops will decrease expenditures by $985,327, of which $812,789 is in payroll. Expenditures in the Jackson street shops will be increased $194,722 and in the Mississippi street shops $97,975. Expenditures will likewise be increased at the Northern Pacific shops at Brainerd, the Great Northern shops at Everett, Wash., and the Spokane, Portland and Seattle shops at Vancouver, and decreased in the Great Northern shops at Superior, Wis., St. Cloud, Minn., and Hillyard, Wash., and the Northern Pacific shops at Livingston, Mont., and South Tacoma, Wash.

F. I. Plechner, purchasing agent for the Great Northern, presented estimates showing a saving of $1,063,571 annually through a consolidation of the purchasing departments of the roads. Among larger savings will be $187,426 for coal; $59,484 in payroll for the purchasing departments; $241,251 in carrying charges; $152,343 in payroll for the stores departments; $59,388 in commissary equipment and supplies; $64,805 in stationery and printing supplies; $53,841 for ties and $231,233 for miscellaneous purchases.

F. W. Sweney, controller of the Northern Pacific, testified that economies which will be made possible through the consolidation of the accounting departments of the roads will total $699,399. This estimate included the elimination of the accounting officers of the Spokane, Portland & Seattle, a saving of $210,865, while $350,000 was listed as additional future economies resulting from the unification of all accounting departments.

To show that the merger is in the public's interest, J. J. Donavan, president of the Blodel-Donavan Lumber Company, Bellingham, Wash., testified that the con-

solidation should result in lower transportation costs and in better service throughout the Northwest as there will be less excuse for a refusal of rate reductions if the roads are permitted to cut their operating costs $10,000,000. He felt that with the benefits resulting it will be possible to extend the distribution of the products of the Pacific coast manufacturers, especially those of the lumber industry, which are now shipped to eastern points by water.

Charles W. Gordon, president of Gordon & Ferguson, St. Paul, said the merger had been approved by the Greater St. Paul committee of the Commerce Association and by a majority of the St. Paul manufacturers, jobbers and business men. He believed that, following the consolidation, many new industries will spring up throughout the Northwest.

Mr. Mahaffie granted the request of the opposition which asked that a temporary adjournment of the proceedings be taken when the northern roads have completed their case in support of the merger so that the opponents may study the testimony and exhibits. The recess is expected to last a month.

NEW YORK CENTRAL.—Further Hearings on Proposed Leases.—The Interstate Commerce Commission has assigned this company's application for authority to lease the Michigan Central and Cleveland, Cincinnati, Chicago & St. Louis for further hearing on November 28 at Washington, before Director Mahaffie of the Bureau of Finance and Examiner Molster.

NEW YORK CENTRAL.—*Valuation.*—This company, in a brief filed with the Interstate Commerce Commission in support of its protest against the tentative valuation of its properties, says that an adjustment of the commission's figures for the property owned by the system from the standpoint of the decisions of the Supreme Court in confiscation cases, omitting consideration of the upward adjustment of prices, would produce approximately $1,800,000,000, excluding materials, supplies and working capital, employing 1914 prices for the engineering accounts. The commission's total figure, including the New York Central, Michigan Central, Big Four and Pittsburgh & Lake Erie, was $1,439,430,087, as of valuation dates ranging from 1915 to 1919. The company also filed a study by Professor H. E. Riggs of the University of Michigan, expressing the opinion that the commission's deduction of $268,305,855 for depreciation is wholly unjustified by the facts and that nothing is to be found in a study of the property and its records that in any way justifies a deduction of to exceed $33,000,000. Professor Riggs gave a definition of depreciation as "substantially equivalent to deferred maintenance."

NEW YORK, NEW HAVEN & HARTFORD.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $4,500,000 of 4½ per cent equipment trust certificates, to be sold to the highest bidder.

PITTSBURGH & LAKE ERIE.—*Stock Dividend.*—This company has applied to the Interstate Commerce Commission for authority to issue $7,197,100 of additional stock as a 20 per cent stock dividend to capitalize part of its surplus of $51,512,088.

ST. JOHNSBURY & LAKE CHAMPLAIN.—*Lease and Sublease.*—The Interstate Commerce Commission has approved a lease by the Canadian Pacific of that portion of the St. Johnsbury & Lake Champlain between St. Johnsbury, Vt., and Lunenberg, 22 miles. The St. Johnsbury & Lake Champlain was formerly operated by the Boston & Maine which some years ago turned the management of the line over to local people. That part of it mentioned in the application was leased to the Maine Central from 1912 to August 1, 1927, when, on the expiration of the lease, there was some misunderstanding which led the St. Johnsbury & Lake Champlain to believe that the Maine Central was not desirous of further renewing the arrangement. Therefore, it negotiated a lease with the Canadian Pacific and the Canadian Pacific has arranged a sublease with the Maine Central. Both the lease and sublease are for a period of ten years. In the sublease the Maine Central agrees to pay the Canadian Pacific the same rental the latter is to pay under its lease. The line forms a part of the Canadian Pacific-Maine Central route between Montreal and Portland, Me.

SEABOARD AIR LINE.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the South Georgia, with a line from Adel to Hampton Springs, Fla., 81.6 miles, and the Seaboard All-Florida has asked authority to purchase the property.

WESTERN PACIFIC.—*Dividends Deferred.*—Directors of the Western Pacific Railroad Corporation, at their meeting in New York on November 2, decided to omit any further dividends on preferred stock in the current year. T. M. Schumacher, president, stated:

"This action was taken after carefully considering the financial condition of the system, including the earnings for the calendar year, which have been partly estimated, and taking into consideration the fact that no dividends can be expected during the balance of the year from the Western Pacific Railroad Company on account of the extensive improvement program it is carrying on."

WEST VIRGINIA MIDLAND.—*Stock.*—The Interstate Commerce Commission has authorized an issue of $275,000 of additional capital stock, to be sold at par.

Dividends Declared

Bangor & Aroostook.—Common, $.87, quarterly; preferred, $1.75, quarterly, both payable January 1, 1928, to holders of record November 30.

Central Railroad of New Jersey.—2 per cent, quarterly, payable November 15 to holders of record November 7.

Average Price of Stocks and of Bonds

	Nov. 1	Last week	Last year
Average price of 20 representative railway stocks..	116.58	118.70	100.39
Average price of 20 representative railway bonds..	96.18	96.22	91.41

Officers

Executive

S. P. Ruddiman, chief engineer of the Detroit, Toledo & Ironton, with headquarters at Dearborn, Mich., has been elected vice-president and general manager, with headquarters at the same point, suceeding **F. L. Rockelman,** who has been recently appointed general sales manager of the Ford Motor Company.

Walter A. Rambach, who was appointed assistant to the vice-president of the Missouri Pacific, with headquarters at St. Louis, Mo., on November 1, was born at St. Louis, Mo., on August 10, 1878. He entered railway service on June 1, 1895, as a clerk on the Missouri Pacific, later being advanced to chief clerk in the office of the assistant general freight agent at St. Louis and then transferred to the office of the freight traffic manager. In September, 1908,

Walter A. Rambach

Mr. Rambach was promoted to assistant general freight agent at St. Louis, becoming assistant to the vice-president in January, 1914. In the following year he was appointed assistant freight traffic manager, with headquarters at St. Louis, where he remained until October, 1919, when he was promoted to freight traffic manager. Mr. Rambach remained in the position of freight traffic manager until his further appointment to assistant to the vice-president.

Financial, Legal and Accounting

G. L. Dover has been appointed assistant treasurer of the Delaware & Hudson, with headquarters at New York, N. Y., succeeding **C. H. Booth,** deceased.

Operating

T. W. Saul, track supervisor on the Chicago Great Western at St. Joseph, Mo., has been appointed trainmaster on the Northern division, with headquarters at St. Paul, Minn.

H. B. Brandon has been appointed trainmaster of all districts of the Central Kansas division of the Missouri Pacific, with headquarters at Osawatomie, Kan., succeeding **B. H. Layne.**

J. L. Strong has been appointed terminal trainmaster of the Atlantic Coast Line, with headquarters at Lakeland, Fla., succeeding **T. C. Hartman. Frank Middlebrooks** has been appointed chief dispatcher at Montgomery, Ala., succeeding **W. S. Baker,** promoted.

Traffic

B. H. Coyle, division freight agent on the Wabash at St. Louis, Mo., has been promoted to assistant general freight agent, with headquarters at the same point.

E. L. Speer, division freight and passenger agent of the Chicago, Burlington & Quincy, with headquarters at Hannibal, Mo., has been promoted to assistant general freight agent, with headquarters at St. Joseph, Mo.

George H. Hamilton, who has been promoted to assistant freight traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., was born on September 15, 1876, at Logansport, Ind. He spent his early life in Topeka, Kan., and entered railway service in 1894 on the Atchison, Topeka & Santa Fe, entering the traffic department of the Kansas City Southern in

G. H. Hamilton

1898. Mr. Hamilton resigned as chief clerk in the traffic department on June 15, 1916, to become assistant general freight agent of the Missouri Pacific, with headquarters at St. Louis. On March 1, 1920, he was promoted to general freight agent, with headquarters at Kansas City, Mo., a position he held until his further promotion to assistant freight traffic manager on November 1.

Robert G. Merrick, who has been promoted to assistant freight traffic manager of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., was born on March 13, 1870, at Manteno, Ill. He entered railway service as a mail clerk in the general freight office of the Santa Fe at Topeka in June, 1888, and was advanced successively through the positions of rate clerk, tariff clerk, assistant chief tariff clerk and chief clerk in that office. In 1904 Mr. Merrick was promoted to division freight agent in the Topeka territory and two years later he was again promoted to assistant general freight agent. He remained as assistant general freight agent at Topeka until March 1, 1920, when he was advanced to general freight agent, with headquarters at Topeka. Mr. Merrick occupied the position of general

Robert G. Merrick

freight agent until his promotion to assistant freight traffic manager on October 1.

Eugene Mock, who has been promoted to assistant freight traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., was born on May 17, 1878, at Coatesville, Mo. He gained his first railway experienece in the local station service of the Keokuk & Western (now a part of the Chicago, Burlington & Quincy) as a telegraph operator and station agent at Cambria, Iowa, beginning June 1, 1895. Three years later Mr. Mock was transferred to the accounting department and in July, 1899, he became a traveling auditor on the Keokuk & Western division of the Burlington. From June, 1900, to January, 1901, he served in the accounting department of the Burlington, then spending a short time as a clerk in the accounting department of the St. Joseph & Grand Island at St. Joseph, Mo. Mr. Mock entered the service of the Chicago, Rock Island & Pacific in 1901 in the traffic department and in 1902 he became auditor of the St. Louis & Gulf (now merged with the St. Louis-San Francisco), remaining with that company and with the 'Frisco until August, 1904, when he was appointed chief clerk to the traffic manager of the Midland

Eugene Mock

Valley, at Ft. Smith, Ark. From Februrary, 1907, to February, 1911, he acted as traffic manager of the Oklahoma Coal Operators' Association, with headquarters at McAlester, Okla., and he then returned to the Midland Valley as general freight and passenger agent, with headquarters at Muskogee, Okla. In May, 1916, Mr. Mock was promoted to traffic manager where he remained until March 1, 1920, when he was appointed assistant general freight agent of the Missouri Pacific, with headquarters at St. Louis. Four years later Mr. Mock was promoted to gentral freight agent, with headquarters at St. Louis, a position he held until his further promotion to assistant freight traffic manager at St. Louis on November 1.

O. G. Parsley, who has been promoted to freight traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., was born in February,

O. G. Parsley

1867, in North Carolina. After graduating from the University of North Carolina he entered the service of the Carolina Central (now a part of the Seaboard

Air Line), acting in a number of clerical capacities until 1893 when he became division freight agent of the Kansas City, Ft. Scott & Memphis (now a part of the St. Louis-San Francisco) at Memphis, Tenn. In 1897 Mr. Parsley was appointed general agent of the Kansas City Southern at Chicago, where he remained until 1915 when he was appointed vice-president of the Missouri, Oklahoma & Gulf (now the Kansas, Oklahoma & Gulf), with headquarters at Ft. Worth, Tex. During 1918 and until the railroads were returned to private operation in 1920 he acted as assistant to the chief of inland traffic service of the War Department at Washington, D. C. Mr. Parsley was then appointed assistant freight traffic manager in charge of solicitation of the Missouri Pacific at St. Louis, a position he held continuously until his promotion to freight traffic manager in charge of solicitation on November 1.

J. G. Carlisle, who has been promoted to director of industrial development of the Missouri Pacific, with headquarters at St. Louis, Mo., was born at Irwinton, Wilkinson County, Ga. At the age of 16 years he moved to Macon, Ga., where in 1891 he entered the commercial office of the Central of Georgia as a clerk. Mr. Carlisle then advanced successively through the positions of soliciting agent,

J. G. Carlisle

traveling passenger agent, commercial agent and division freight agent at Macon, becoming assistant general freight agent, with headquarters at Savannah, Ga., in 1913. He was promoted to general freight agent, with headquarters at Savannah, in 1917 and in the following year he was again promoted to assistant freight traffic manager in charge of solicitation, with headquarters at the same point. At the close of federal control of the railways Mr. Carlisle left railroad service to supervise sales for the Bibb Manufacturing Company, cotton goods manufacturers, later acting as general manager of the Citrus Fruit Exchange. He returned to railway service on September 1, 1924, as general freight agent of the Missouri Pacific, with headquarters at St. Louis, a position he held until his promotion to director of industrial development on November 1.

Mechanical

A. T. Miller has been appointed assistant to superintendent of motive power of the Atlanta & West Point, the Western Railway of Alabama and the Georgia Railroad, with headquarters at Atlanta, Ga.

H. P. Bender has been appointed electrical engineer of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, with headquarters at Pittsburgh, Pa., succeeding **C. H. McConnell,** promoted.

The jurisdiction of **A. P. Prendergast,** mechanical superintendent of the Texas & Pacific, with headquarters at Dallas, Tex., has been extended to give him authority over all mechanical forces and equipment of the Cisco & Northeastern, the Abilene & Southern, the Pecos Valley Southern, the Weatherford, Mineral Wells & Northwestern and the joint New Orleans terminal properties of the Texas & Pacific and the Missouri Pacific. Mr. Prendergast formerly served these companies in a consulting capacity.

Grover C. Carver, road foreman of engines of the Boston & Maine, with headquarters at Boston, Mass., has been appointed supervisor of rail motor cars, having general supervision over rail motor car maintenance and operation, with the same headquarters. **M. E. Foster** has been appointed inspector of rail motor car maintenance, with headquarters at Boston. The position of supervisor of rail motor car maintenance has been abolished. **Albert A. Gagnon** has been appointed road foreman of engines at Boston, succeeding Mr. Carver.

Obituary

F. E. Hollingshead, assistant general freight agent of the Chicago, Burlington & Quincy, died at his home in St. Joseph, Mo., on October 4 after an illness of only a few days.

Norman S. Rankin, special publicity agent and editor of the bureau of Canadian information, department of colonization and development of the Canadian Pacific, died at his home in Hudson Heights, Montreal, Que., on October 28, following an attack of pneumonia. He was 54 years of age.

Charles W. Nelson, assistant general manager of the Lake Tahoe Railway & Transportation Company until its absorption by the Southern Pacific in 1926, died at his home in Alameda, Cal., on October 11. Before 1900 Mr. Nelson had been connected with the freight department of the Southern Pacific, leaving San Francisco, Cal., at that time to enter the freight department of the Illinois Central. He resigned from service on the Illinois Central in 1905 to become assistant general manager of the Lake Tahoe. Since 1926 Mr. Nelson has been engaged in the wholesale hardware business.

Wilton S. Crowl, vice-president and traffic manager of the Wyandotte Terminal, with headquarters at Wyandotte, Mich., dropped dead while playing golf near Detroit, Mich., on September 27. Mr. Crowl, who was 55 years of age and was born at Chicago, entered railway service on the Michigan Central in 1888. In the service of that company he became industrial agent at Detroit and in 1917 was appointed traffic manager of the Wyandotte Terminal, later being elected vice-president and traffic manager. At the time of his death he was also traffic manager of the Michigan Alkali Works at Wyandotte.

James Henry Kennedy, consulting engineer specializing in railway construction, died at Vancouver, B. C., on October 21. Mr. Kennedy was born at Stittsville, Ont., on March 3, 1852, and after receiving the degree of civil engineer from Toronto University in 1886, he became an assistant engineer on construction on the Canadian Pacific in the Lake Superior district. Later he served as an assistant engineer on construction of the Temiscouata Railway, on the Great Northern in Montana and on the Minneapolis, St. Paul and Sault Ste. Marie in North Dakota. In 1898 Mr. Kennedy was appointed chief engineer of the Vancouver, Victoria & Eastern Railway & Navigation Company (now a part of the Great Northern). He established a consulting engineering practice, specializing in railway construction, in 1914, maintaining his practice until the time of his death.

Hubert L Bell, superintendent of the Ogden Union Railway & Depot Company, died in the Dee hospital at Ogden, Utah, on October 25. Mr. Bell was born on Prince Edward Island, N. S., on December 6, 1862, and entered railway service in 1881 in the engineering department of the Northern Pacific. In 1886 he became a messenger on the Great Northern, serving that line also as a caller and as an agent. Later Mr. Bell worked with the Colorado Midland (now a part of the Midland Terminal) as a telegrapher and as a dispatcher at Colorado Springs, Colo. In 1908 he was appointed chief dispatcher of the Southern Pacific at Ogden, being promoted to assistant superintendent at the same point in 1910. Mr. Bell was appointed superintendent of freight terminals of the Oregon Short Line and general superintendent of the Ogden Union Railway & Depot Company at Ogden in 1916. In the following year he was appointed assistant superintendent of the Union Pacific at Ogden, remaining as general superintendent of the Ogden Union. After 1919 Mr. Bell's title on the Ogden Union was changed to superintendent and he devoted all of his time to that position until the time of his death.